ORDER NO. AD9512269C8

Service Manual

CD Changer

Compact Disc Changer

SL-CA10

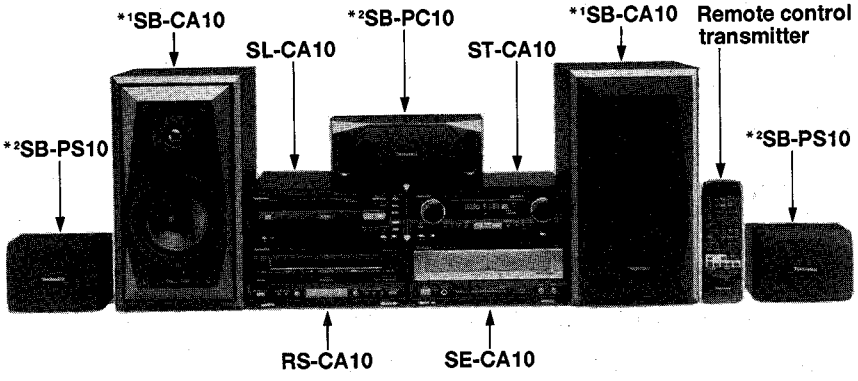
COMPACT disc DIGITAL AUDIO

DIGITAL

MASH multi-stage noise shaping ※

Colour

(K)...Black Type



Area

Suffix for Model No.	Area	Colour
(E)	Europe, Asia, Latin America, Middle East, Africa and Oceania.	(K)

System: SC-CA10

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

RAE0150Z MECHANISM SERIES

■SPECIFICATIONS

■Audio

DA converter 1 bit 2 DAC MASH※

■Pickup

Wavelength 780 nm

■General

Dimensions (W×H×D) 280×89×331 mm

Weight 2.5 kg

Notes:

1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

※ MASH is a trademark of NTT.

System	Tuner	CD changer	Amplifier	Cassette deck	Speakers
SC-CA10	ST-CA10	**SL-CA10**	SE-CA10	RS-CA10	*1 SB-CA10 *2 SB-PC10 (Center) (SB-PC10+SB-PS10)

*1 Made in PAES
*2 For (E, EB, EG) Areas.....Made in PAES
For (GC, GN) Areas.....Made in NABEL

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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NOTE:
Refer to the service manual for Model No. SE-CA10 (ORDER No. AD9512272C8) for information on "ACCESSORIES", "INSTALLATION ", "CONNECTIONS" and "PACKAGING".

■PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 780 nm
Maximum output radiation power from pickup: 100 µW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

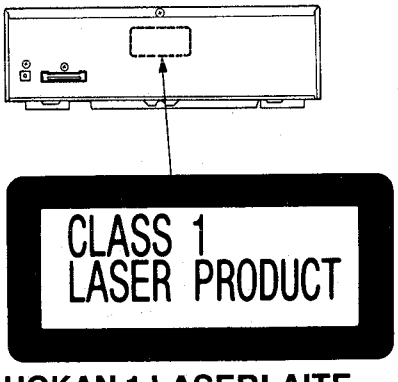
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

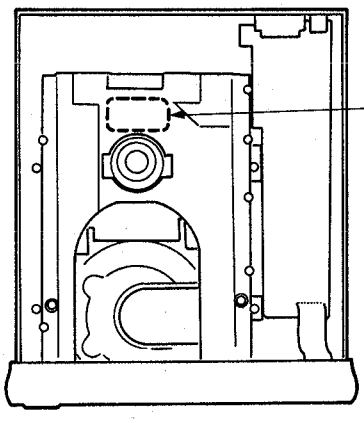
Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

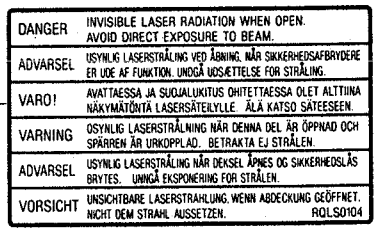
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.



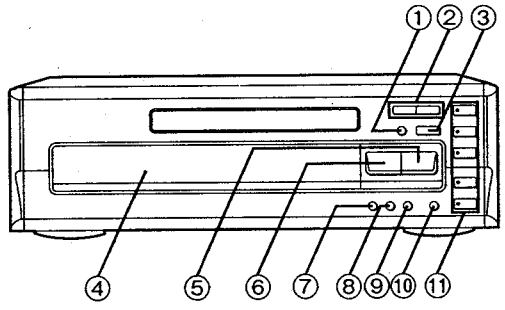
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT





CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

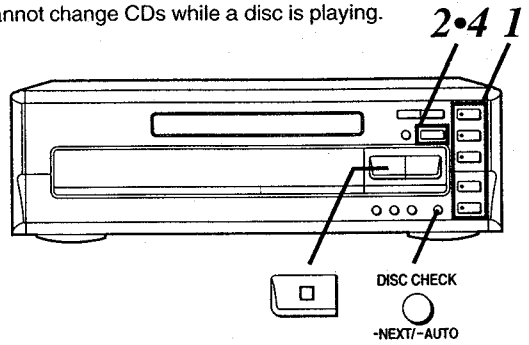
■LOCATION OF CONTROL



① **Pause button (❚❚)**
② **Skip/search buttons (SKIP/SEARCH)**
③ **Disc tray open/close button (▲ OPEN/CLOSE)**
④ **Disc tray**
⑤ **Play button and indicator (▷)**
⑥ **Stop button (□)**
⑦ **Random play button (RANDOM)**
⑧ **Repeat button (REPEAT)**
⑨ **AI edit button (AI EDIT)**
⑩ **Disc check button (DISC CHECK)**
⑪ **Disc select buttons and indicators (DISC)**

■LISTENING TO COMPACT DISCS

Always stop the changer before loading or changing CDs. You cannot change CDs while a disc is playing.



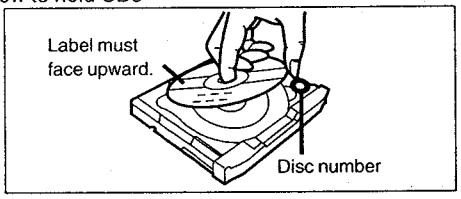
How to load CDs

1 Press DISC 1–5, whichever you want to open.

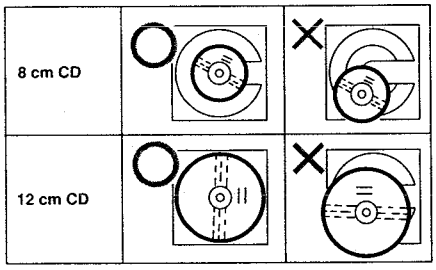
2 Press ▲ OPEN/CLOSE.

3 Set the CD in the tray.

•How to hold CDs

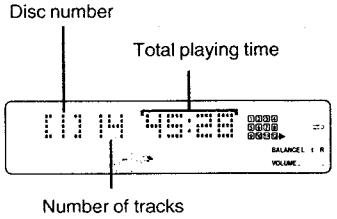


•Load CDs as shown below.



4 Press ▲ OPEN/CLOSE.

The open tray will close.



5 To load other CDs, repeat steps 1 through 4.

For your reference:

If the tray you want to open is already shown on the display, you obviously do not need to perform step 1.

How to check which trays have discs

DISC CHECK is a convenient way to know what discs you have in your changer and where.

Press DISC CHECK (-NEXT).

Not the disc number shown on the display, but the next tray after that will open. For example, when disc 4 is displayed, tray 5 will open.

- Every time you press the button, the next tray opens.
- You can change the CD while the tray is open.
- To close the tray, press ▲ OPEN/CLOSE.

Hold down DISC CHECK (–AUTO).

The trays will open (and close) automatically one after another. The first one to open will be the next tray after the disc number shown on the display. This way, you can check all trays in a row.

- To stop the auto check in course, press □.

Note

Do not attempt to change CDs while trays are opening and closing in the auto check.

Disc indicators

When you open or close a tray with the ▲ OPEN/CLOSE button, the changer automatically detects whether there is a CD in the tray or not. The indicator will act as follows.

● (red)	There's a CD in the tray.
Out	There isn't a CD in the tray.

While the CD is playing, its indicator is green.

Note

In the following cases, CD detection is OFF. The indicators will be red whether there is a disc in the tray or not.

- When the tray is closed with DISC CHECK
- When the tray is closed with DISC 1–5
- When the tray is closed by selecting a mode other than CD

For your reference:

While the CD changer is changing discs, the disc indicators act as follows.

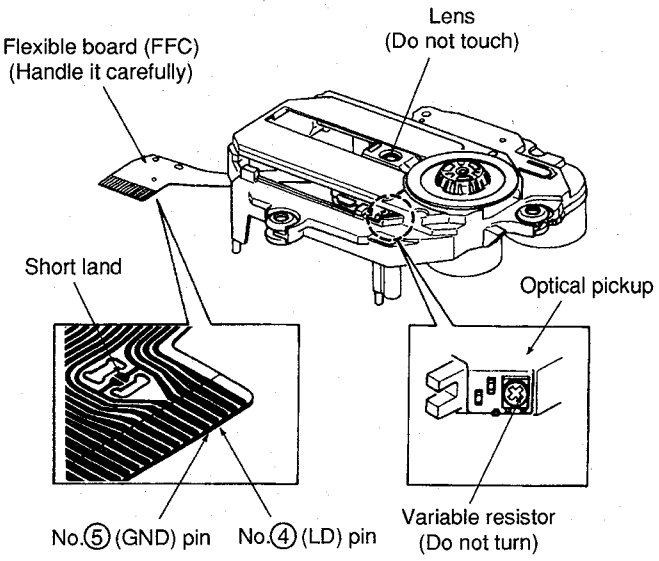
- All the indicators the changer skips through will flash.
- The indicator of the selected disc (or last disc in auto DISC CHECK) will light up.

■HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

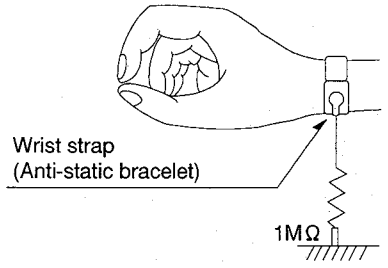
● Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. ④ (LD) and No. ⑤ (GND) pins on the flexible board (FFC) is shorted with a solder build-up to prevent damage to the laser diode.
   To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.



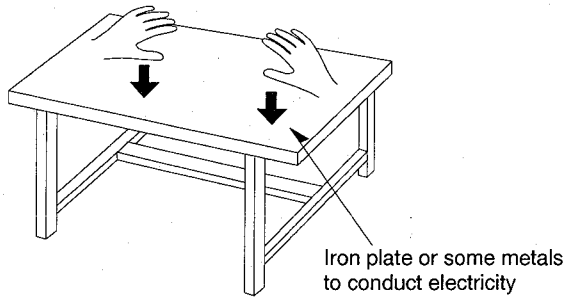
● Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.



Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



■ Operation Check and Main Component Replacement Procedures

NOTE

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

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• CD Changer Disassembly / Reassembly page.

1. Removal for the CD changer unit. ..... 5.
2. Removal for the traverse unit. ..... 7.
3. Disassembly for the CD changer unit. ..... 7,8.
4. Reassembly for the CD changer unit. ..... 9~12.
5. Inspection for the CD changer unit. ..... 12.

• Checking Procedures for each P.C.B.

1. Checking for the main P.C.B. and the operation P.C.B.. ..... 13.
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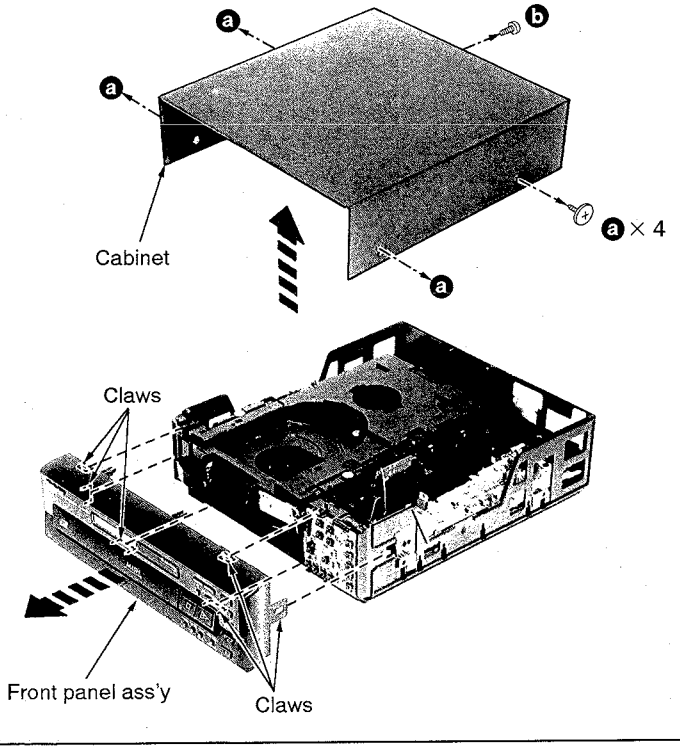
• Main Component Replacement Procedures

1. Replacement for the traverse deck ass'y. ..... 14~16.

■ CD Changer Disassembly / Reassembly

Removal for the CD changer unit



Step 1 Remove the 5 screws.

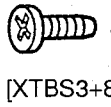
↓

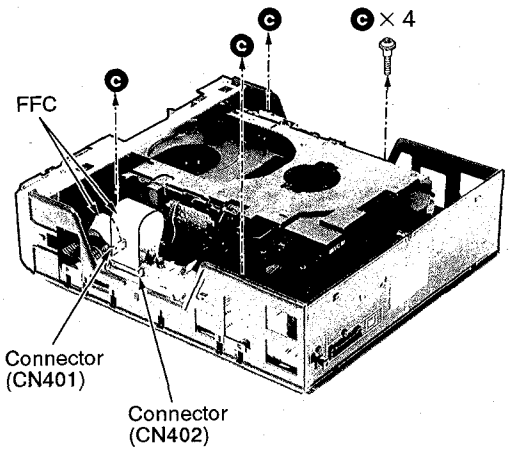
Step 2 Remove the cabinet.

↓

Step 3 Release the 6 claws, and then remove the front panel ass'y.

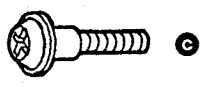
a (Black)
[RHD30007-K1]

 b (Black)
[XTBS3+8JFZ1]

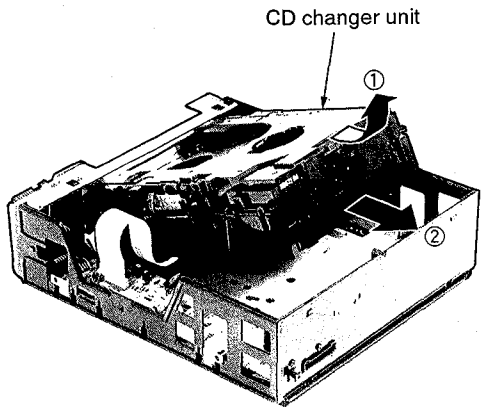


Step 4 Pull out the FFC (2 points).

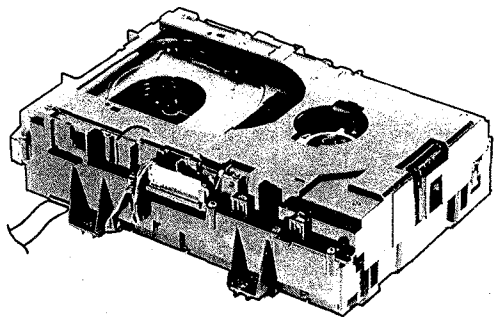
Step 5 Remove the 4 screws.



[RHD30065]



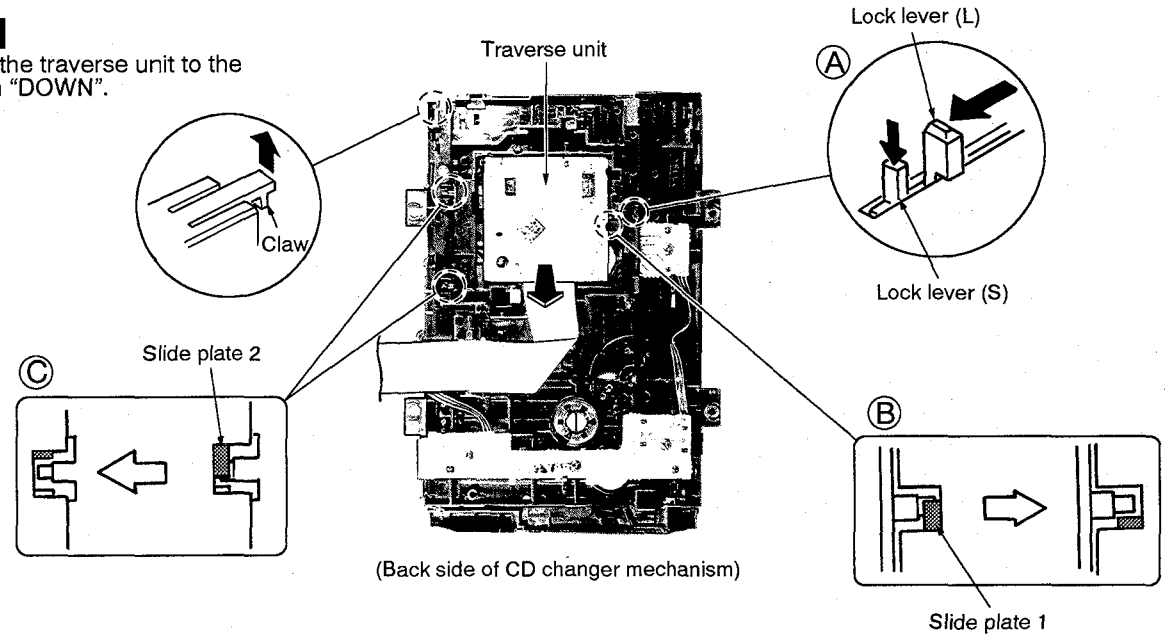
Step 6 With lifting the rear side of CD changer unit, pull it backward.



The CD changer unit will be removed.

Removal for the traverse unit

NOTE
Locate the traverse unit to the position "DOWN".



Procedures

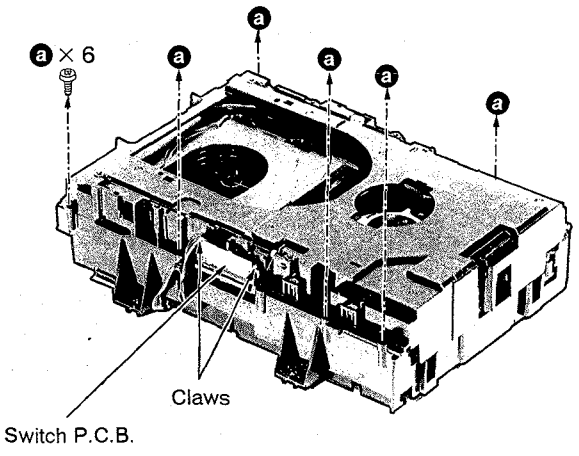
Step 1 Push the lock lever (S) with lifting the claw, and then push the lock lever (L) in the direction of arrow (➡).
Refer to the figure Ⓐ.

Step 2 The slide plate 1 and 2 of traverse retain boss Ⓑ and Ⓒ are open.
Refer to the figures Ⓑ and Ⓒ.

Step 3 Push the traverse unit in the direction of arrow (➡).
(The FFC is connected.)

Step 4 The traverse unit will be removed.

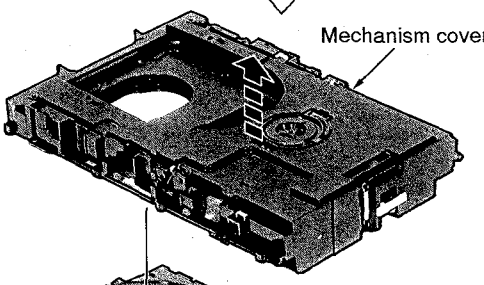
Disassembly for the CD changer unit



NOTE
Locate the traverse unit to the position "DOWN".

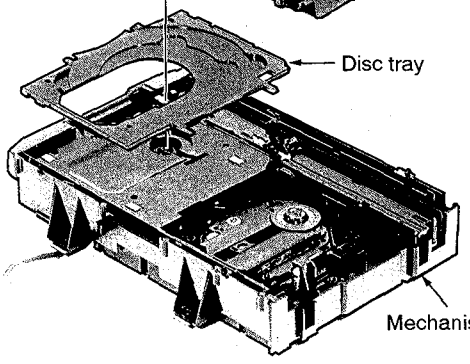
Step 1 Remove the switch P.C.B..

Step 2 Remove the 6 screws.

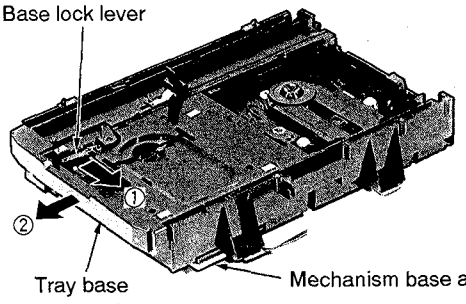


Step 3 Remove the mechanism cover ass'y.

ⓘ 4 disc trays contacted to the mechanism cover ass'y will be removed.
1 disc tray is removed to the mechanism base ass'y.

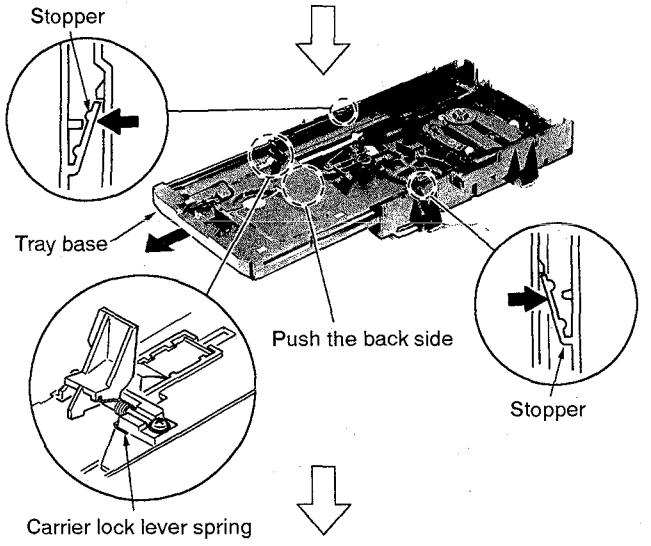


Step 4 Remove the disc tray sided mechanism base ass'y.



Step 5 Unlock the base lock lever.

Step 6 Draw the tray base until it will be stopped.

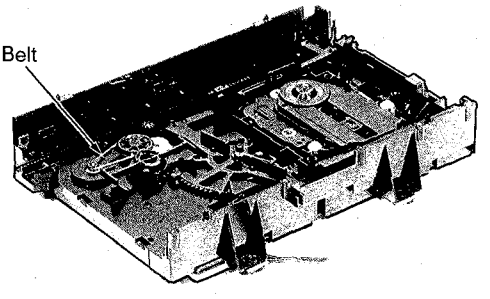


Step 7 Release the stopper manually.

Step 8 Draw the tray base.

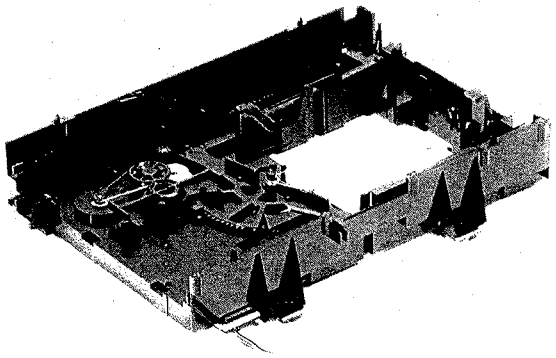
ⓘ In case that the tray base can not be open due to hooking, draw the tray base with finger pressing the back side indicated by ◌ of base. (Take care handling of stopper.)

ⓘ Take care not avoid the carrier lock lever spring.

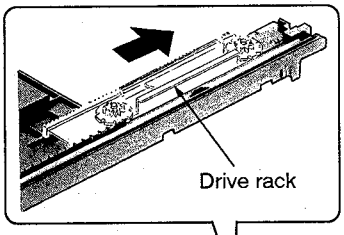


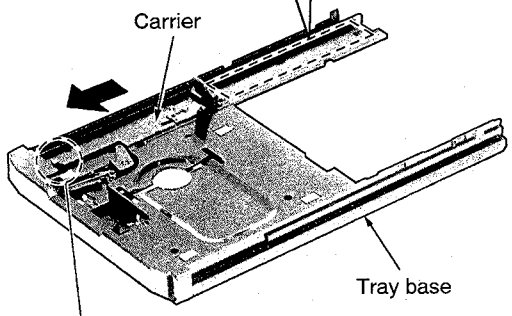
The belt and each part can be replaced after above procedures are performed.

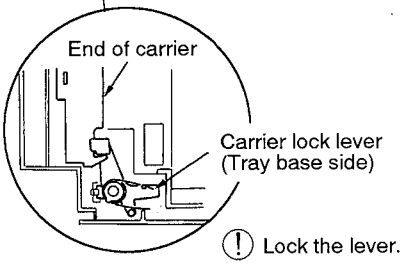
Reassembly for the CD changer unit



〔Back side〕



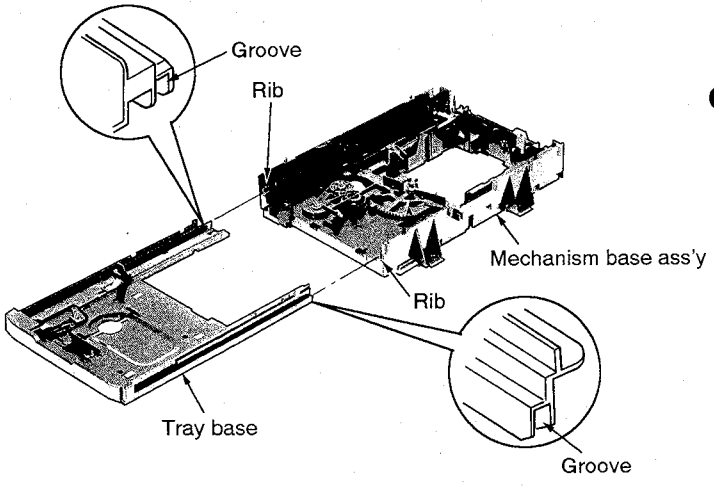




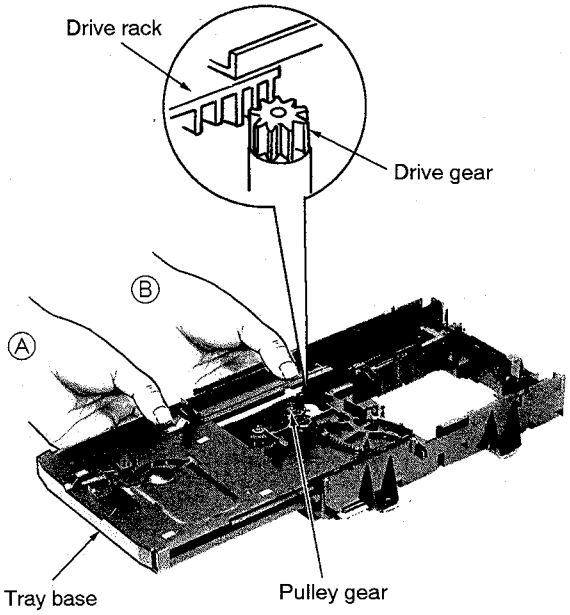
! Lock the lever.

Step 1 Pull the drive rack in the direction of arrow (➡) fully.

Step 2 Slide the carrier in the direction of arrow (➡).



Step 3 Insert the tray base to the mechanism base ass'y with keeping the procedures **Step 1** and **Step 2** .

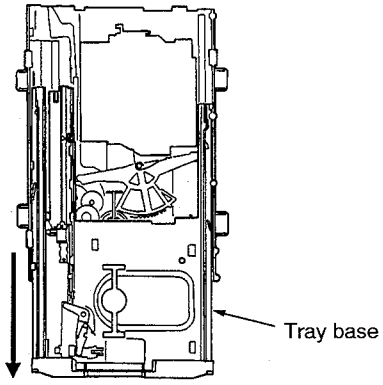


Step 4 ◉ Insert the drive rack until the driver rack interferes with the drive gear.

Position Ⓐ

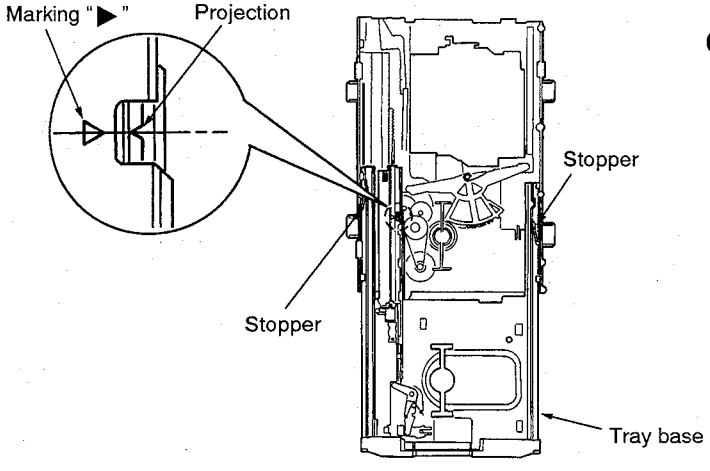
Step 5 ◉ Rotate the pulley gear clockwise gently by hand (5 or 6 times).

ⓘ When the gear begins to rotate, rotate the pulley gear with finger pressure (position Ⓑ) because the drive rack gear will fall free.



Step 6 Allow the tray base be open manually.

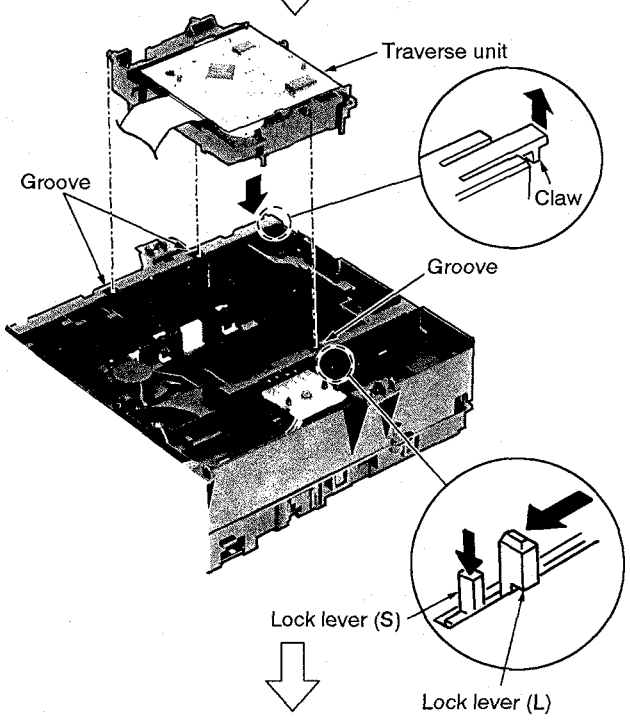
※ Draw the inserted tray base forward.



Step 7 Locate the projection at the marking "▶" as shown left.

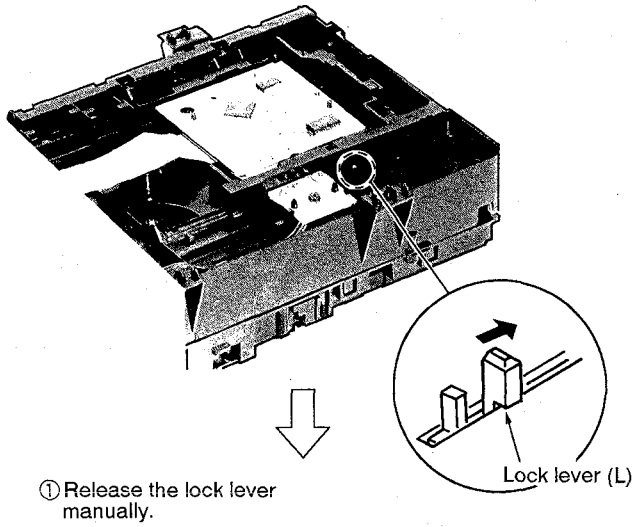
ⓘ In case that the stated above is not operated draw the tray base again.
(Refer to item ⓘ on page L–5)

(Retry the item marked with ◉)



Step 8 While lifting the claw upward, press the lock lever (L) with forcing the lock lever (S).

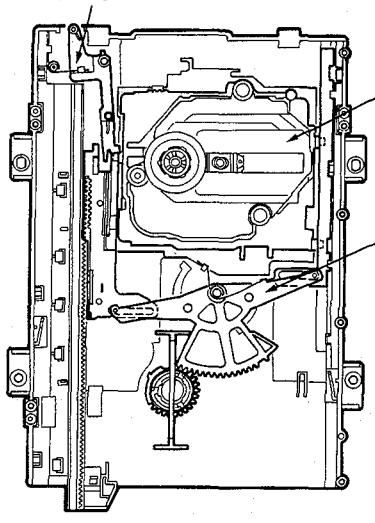
Step 9 Align the boss of traverse unit with the groove of mechanism base ass'y.



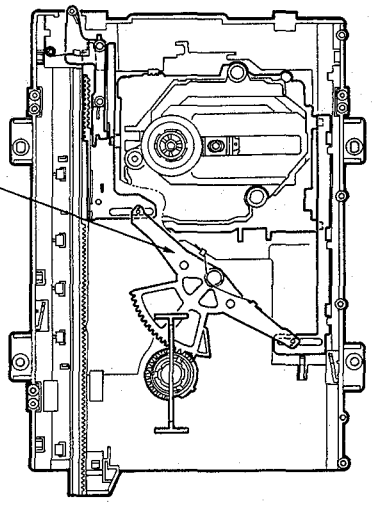
Step 10 Pull the lock lever (L) in the direction of arrow (➡).

After assembly, confirm the traverse unit operation.

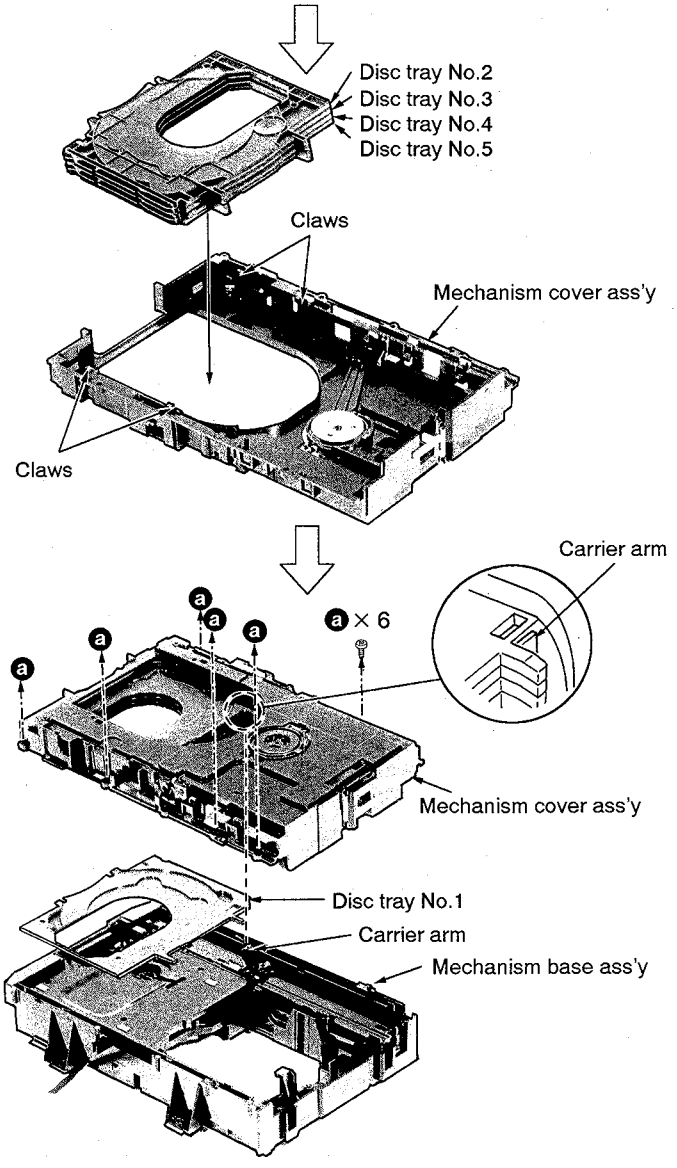
①Release the lock lever manually.



〈"DOWN"stated〉



〈"UP"stated〉



Step 11 Install the 4 disc trays to the mechanism cover ass'y. (Allow them to lock with claws.)

ⓘ Install the disc trays in specific order. (Disc tray No. is indicated on the tray.)

Step 12 Place the disc tray No.1 on the mechanism base ass'y.

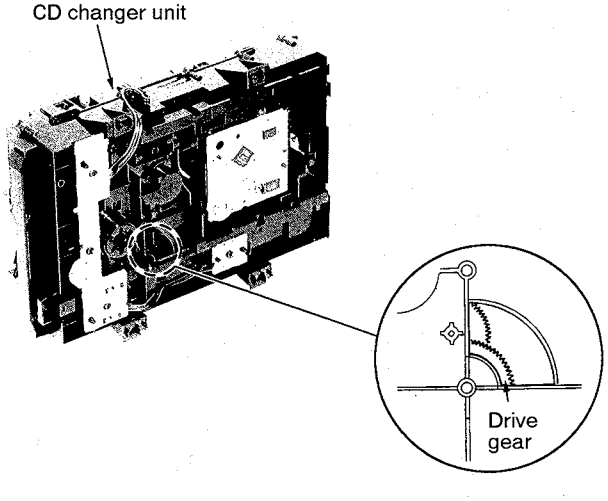
Step 13 Install the mechanism cover ass'y.

ⓘ The carrier arm is positioned as shown left.

[XTB3+10J]

Inspection for CD changer unit

• Begin the inspections in condition that the traverse is kept from disc tray. (5 disc trays in the store compartment.)



※ Manual operations

① Rotate the drive gear counterclockwise manually.

The traverse runs over the disc tray, and rises at maximum level.

② Rotate the drive gear clockwise manually.

The disc tray moves and is stored in upper compartment.

The tray base is open.

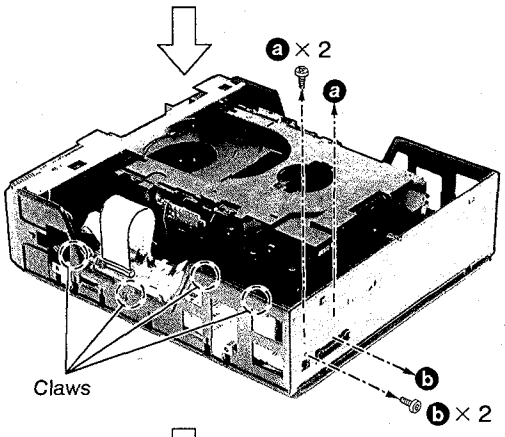
③ Again rotate the drive gear counterclockwise manually.

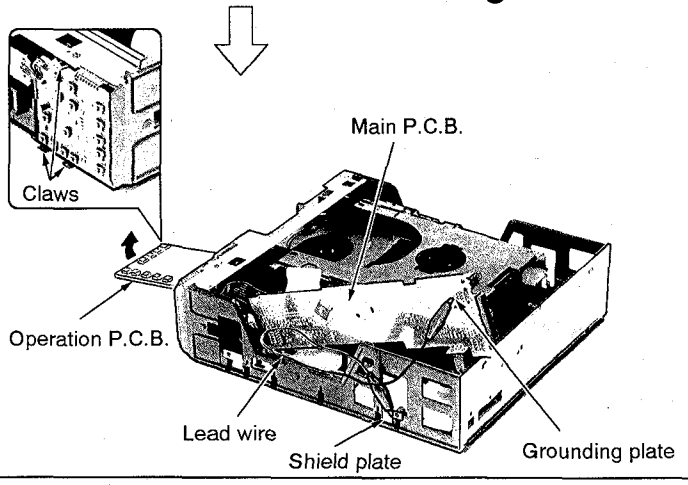
The tray base is closed, and then it returns to start position.

■ Main Component Replacement Procedures

Checking for the main P.C.B. and the operation P.C.B.

Perform the items Step 1 and Step 2 for CD changer removal (Refer to page 5.)





Main P.C.B.

- Step 1 Remove the 4 screws.
- Step 2 Release the 4 claws, and then stand the main P.C.B..
- Step 3 Connect the lead wire between the grounding plate and shield plate.

Operatiom P.C.B.

- Step 1 Release the 3 claws, and then upset the operation P.C.B..

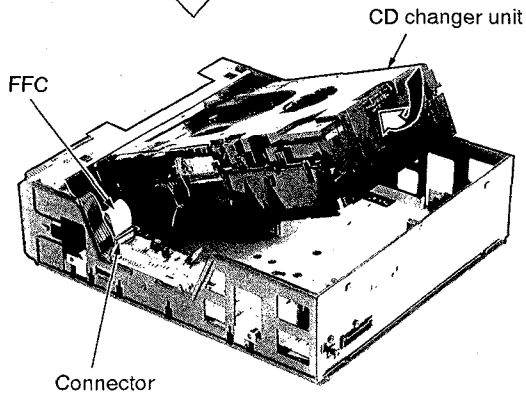
Check the main P.C.B. (solder side) and the operation P.C.B. (solder side) as shown left.

ⓐ (Black)	ⓑ (Black)
[XTB3+8JFZ]	[XTBS3+8JFZ1]

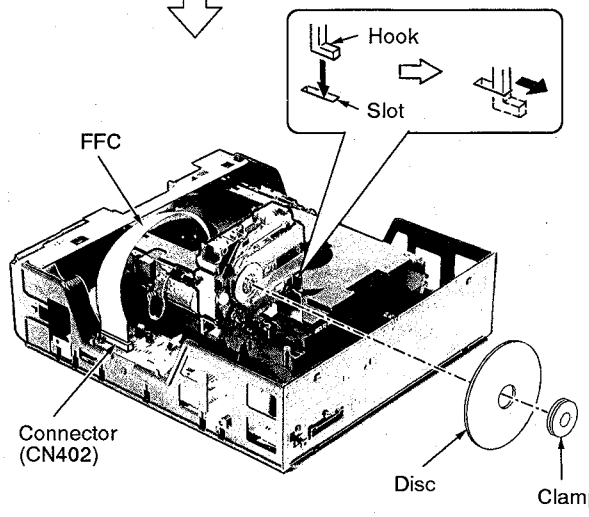
Checking for the servo P.C.B.

Perform the items Step 1 ~ Step 6 for CD changer removal (Refer to pages 5 and 6.)

Perform the items Step 1 ~ Step 4 for traverse unit removal (Refer to page 6.)



- Step 1 Install the CD changer unit to the set.
  - ⓘ Screw tighten is not necessary.
- Step 2 Connect the FFC to the connector (CN401).

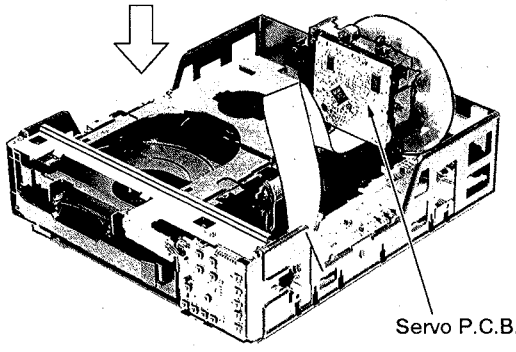


Step 3 Align the hook of traverse unit with the slot, and then stand it.

Step 4 Attach the disc and clamper with magnet to the traverse unit.

ⓘ Prepare the clamper used ordinaly.

Step 5 Connect the FFC to the connector (CN402).



Check the servo P.C.B. (solder side) as shown left.

■ Main Component Replacement Procedures

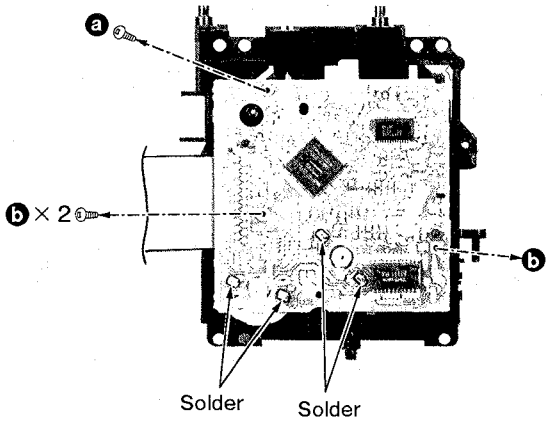
Replacement for the traverse deck ass'y

Perform the items **Step 1** ~ **Step 6** for CD changer removal
(Refer to pages 5 and 6.)

Perform the items **Step 1** ~ **Step 4** for traverse unit removal
(Refer to page 7.)

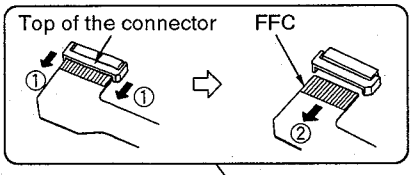
ⓐ [XTN2+6G]

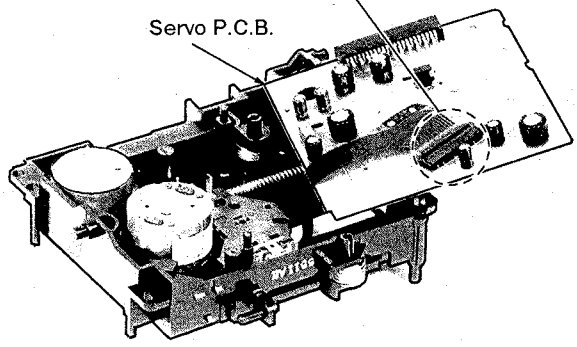
ⓑ [XTV2+6G]



Step 1 Remove the 3 screws.

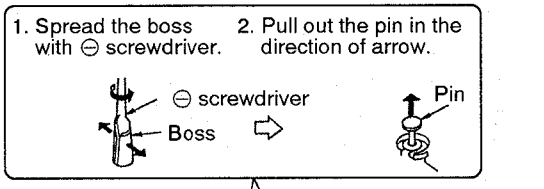
Step 2 Unsolder the motor terminals.

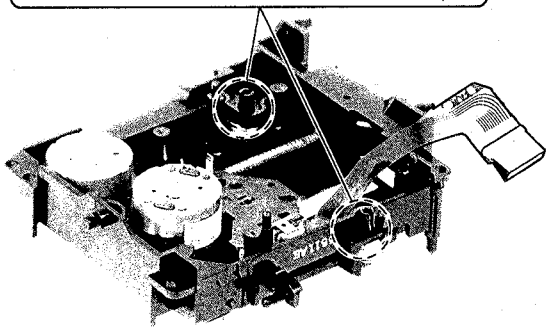




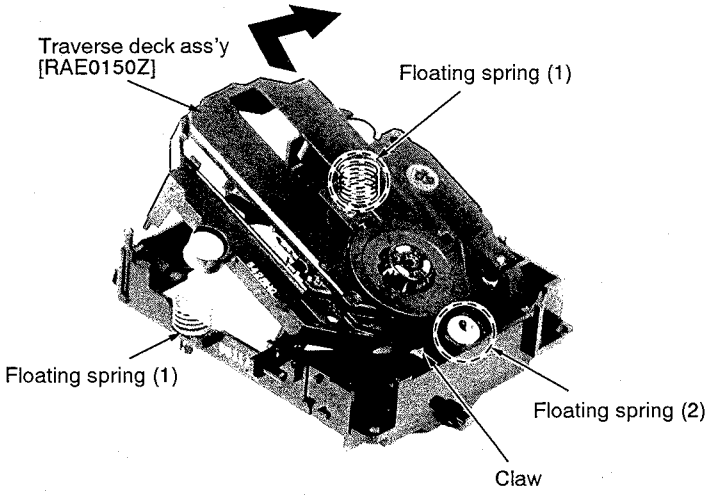
Step 3 Remove the FFC from the connector, and then remove the servo P.C.B..

ⓘ Solder the point between pin 4 (LD) and pin 5 (GND) of FFC.
(Refer to "Handling Precautions for Traverse Deck" on page 4).





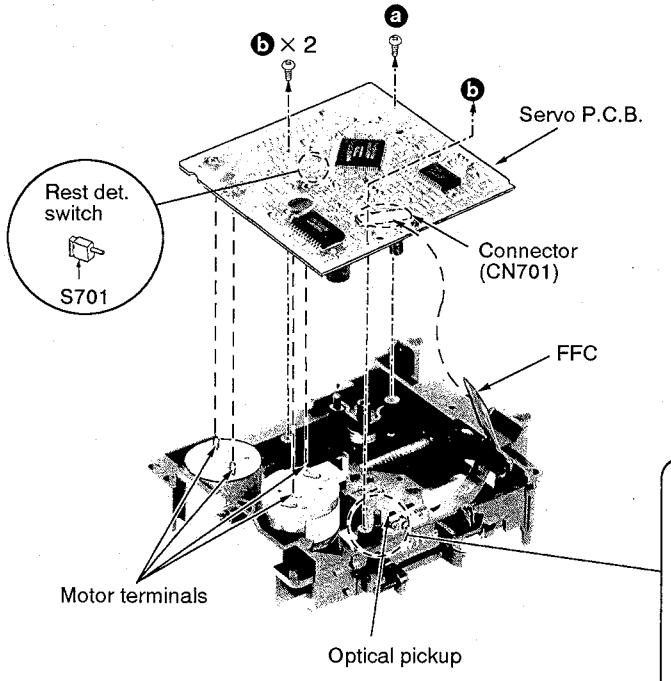
Step 4 Remove the pins.



Step 5 Release the claws, and then remove the traverse deck ass'y.

ⓘ Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck ass'y.

Installation of the servo P.C.B.



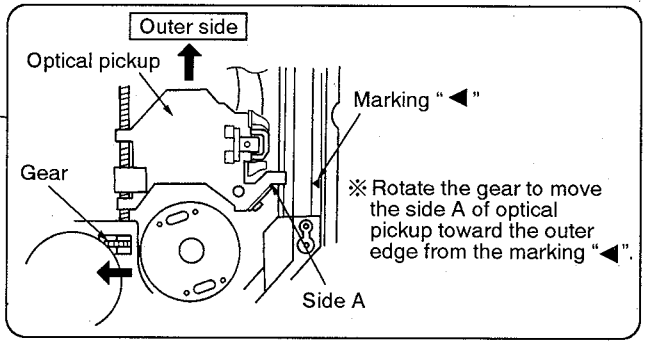
Step 1 Before installing the servo P.C.B., move the optical pickup toward the outer edge from mark "▼".

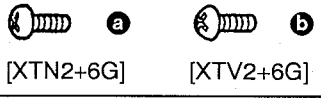
ⓘ In case that the optical pickup is not moved toward the outer edge from the marking, the rest detect switch (S701) mounted on the servo P.C.B. may be damaged.

Step 2 Connect the FFC to the connector.

Step 3 Install the servo P.C.B., and then tighten screws.

ⓘ After tightening screws, solder each motor terminal.





■ERROR CODE DISPLAY AND SERVO ADJUSTMENT FUNCTION

This unit has an error code display function, so that if the unit operates incorrectly, the fault is displayed using an error code on the FL display of the tuner (ST-CA10). It also has a servo adjustment function for displaying the status of servo system functions (focus, tracking, CLV) on the tuner's FL display.
The system control IC and FL display are part of the tuner so make sure the system has been connected properly before using these functions. (This unit can be operated independently, although the error code display and servo adjustment functions cannot be used.)
Use these two functions for guidance during fault diagnosis and repair.

Note: Check beforehand for scratching or soiling of the test disc (SZZP1054C), and soiling or other problems with the optical pickup lens.

● Error code display procedure

Automatic adjustment results

Turn power ON.

↓

Load the test disc (SZZP1054C).

↓

Hold down the REPEAT button for at least 2 seconds, and then press the STOP button for at least 2 seconds while continuing to hold down the REPEAT button.

↓

A servo section error code is displayed. (See **Table 2.**)
Use this error code display as a guideline for finding the malfunction point in the servo circuitry. If the error code **"E-00"** is displayed, the unit is "OK (No problem)."

Checking the mechanism switches

Press the F. SKIP button.

↓

A mechanism OK/NG error code is displayed. (See **Table 1.**)
This error code can be used to diagnose whether or not the mechanism is OK. If there are multiple errors, these can be displayed successively by pressing the F. SKIP button.

↓

Remove the disc and turn the power OFF. (The error code display mode is canceled.)

● Servo adjustment procedure

Turn the power ON.

↓

Load the test disc (SZZP1054C)

↓

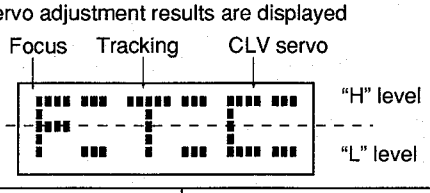
Hold down the REPEAT button for at least 2 seconds, then press the PAUSE button for at least 2 seconds while holding down the REPEAT button.

↓

Press the ▷ (PLAY) button, and play for 10 seconds

↓

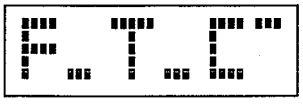
Servo adjustment results are displayed



↓

Remove the disc and turn the power OFF.

(Example)



= Normal

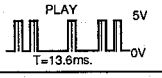
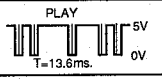
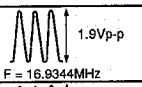
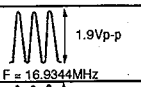
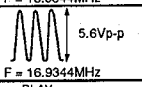
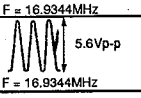
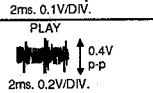
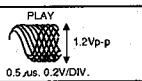
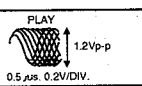
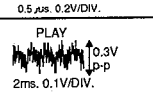
	"L" level	"H" level
Focus	Focus system normal	Focus system defective
Tracking	Tracking system normal	Tracking system defective
CLV servo	CLV servo system defective	CLV servo system normal

● Table 1

FL display	Symptom	Cause
H - 15	When CD tray opens, it closes by itself.	Disc tray "Open" detection switch (S4) fault.
H - 16	When CD tray closes, it opens by itself	Disc tray "Closed" detection switch (S4) fault.
F - 15	Does not play, even when CD play button is pressed.	Pickup rest position detection switch (S701) fault.
F - 16	Traverse pushes up disc tray.	Up position detection switch (S3) fault.
F - 26	Does not move even when " ▷ " (PLAY) is pressed.	System control or servo processor IC (IC401, 702) fault.
F - 27	Tray keeps moving for a while, or selected tray does not open.	Disc number detection switch (S5) fault.
F - 28		Stocker position detection, or play position detection switch (S1, S2) fault.
F - 75	"NO DISC" is displayed and unit does not play, even when a CD is loaded.	CD circuit power supply problem.

● Table 2

※ The unit is satisfactory if the error code is **E - 00** of **E - 02**
※ Before testing, check that the test disc is free of scratches and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
E - 01	Focus and tracking offset adjustments not completed in the specified time period.	1. Clocks X1 and X2, power supply V_{DD} and reset/RST, all on IC702. 2. MDATA, MCLK, MLD and SENSE signal to/from mechanism controller.	MDATA	IC702 ⑧ pin		0V
			MCLK	IC702 ⑦ pin		4.8V
			MLD	IC702 ⑨ pin		
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑱ pin	4.9V	4.9V
			X1	IC702 ⑱ pin		
			X2	IC702 ⑲ pin		
E - 03 E - 05 E - 07 E - 09 E - 0B E - 0D E - 0F	Disc play unstable.	1. Scratches or contaminants on disc surface. 2. Focus and tracking servo circuits (check waveforms, voltages, and part values.) 3. Spindle driver circuit. 4. Optical pickup.	FE	IC702 ㉜ pin		2.5V
			TE	IC702 ㉝ pin		2.5V
			FOD	IC702 ㉘ pin	2.5V	2.5V
			TRD	IC702 ㉗ pin	2.5V	2.5V
			KICK	IC702 ㉖ pin	2.5V	2.5V
			/FLOCK	IC702 ⑪ pin	0V	4.9V
			/RF DET	IC702 ㊳ pin	0V	4.9V
			RF	TJ701		3.4V
			STAT	IC702 ⑰ pin	4.9V	0V
E - 04 E - 06 E - 0C E - 0E	Best "Eye" (PD Balance) adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FBAL	IC702 ㉚ pin	2.5 ±1.25V	2.5 ±1.25V
			RF	TJ701		3.4V
			FE	IC702 ㉜ pin		2.5V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V
E - 08 E - 0A	Focus or Tracking gain adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FE	IC702 ㉜ pin		2.5V
			TE	IC702 ㉝ pin		2.5V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V

■MEASUREMENTS AND ADJUSTMENTS

Cautions:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on" , laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

This unit SL-CA10 is designed to operate on power supplied from the Amplifier SE-CA10 through the Tuner ST-CA10.
When connecting the unit to other system components, do not connect to the Amplifier SE-CA10 directly. Be sure to connect this unit through the Tuner ST-CA10.
When operating the unit SL-CA10 alone for testing and servicing, without having power supplied from the Amplifier SE-CA10 and the Tuner ST-CA10, use the following method.

Power Supply to This Unit alone

1. Short-circuit the section between jumper (J13) and jumper (J14) [TEST MODE].
2. Apply 11V AC power to the section between AC of the coil (L1) and the jumper (J3) GND as well as the section between AC of the coil (L2) and the jumper (J3) GND. **(Shown in Fig. 1)**

Operating the Unit Alone

When this unit is operated alone without system connection to other units, the switches on the front panel remain inoperative. To operate the switches, follow the procedure below.
1. Short-circuit the points between the jumper (J11), the jumper (J12) and the [REF-M].
2. Short-circuit the points between the jumper (J15), the jumper (J16) and the [KEY2].

To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R447 and the GND point of the jumper (J3) as well as the section between LINE OUT (R ch) of the resistor R448 and the GND point of the jumper (J3) and check if the signals are outputting from this unit. **(Shown in Fig. 1)**

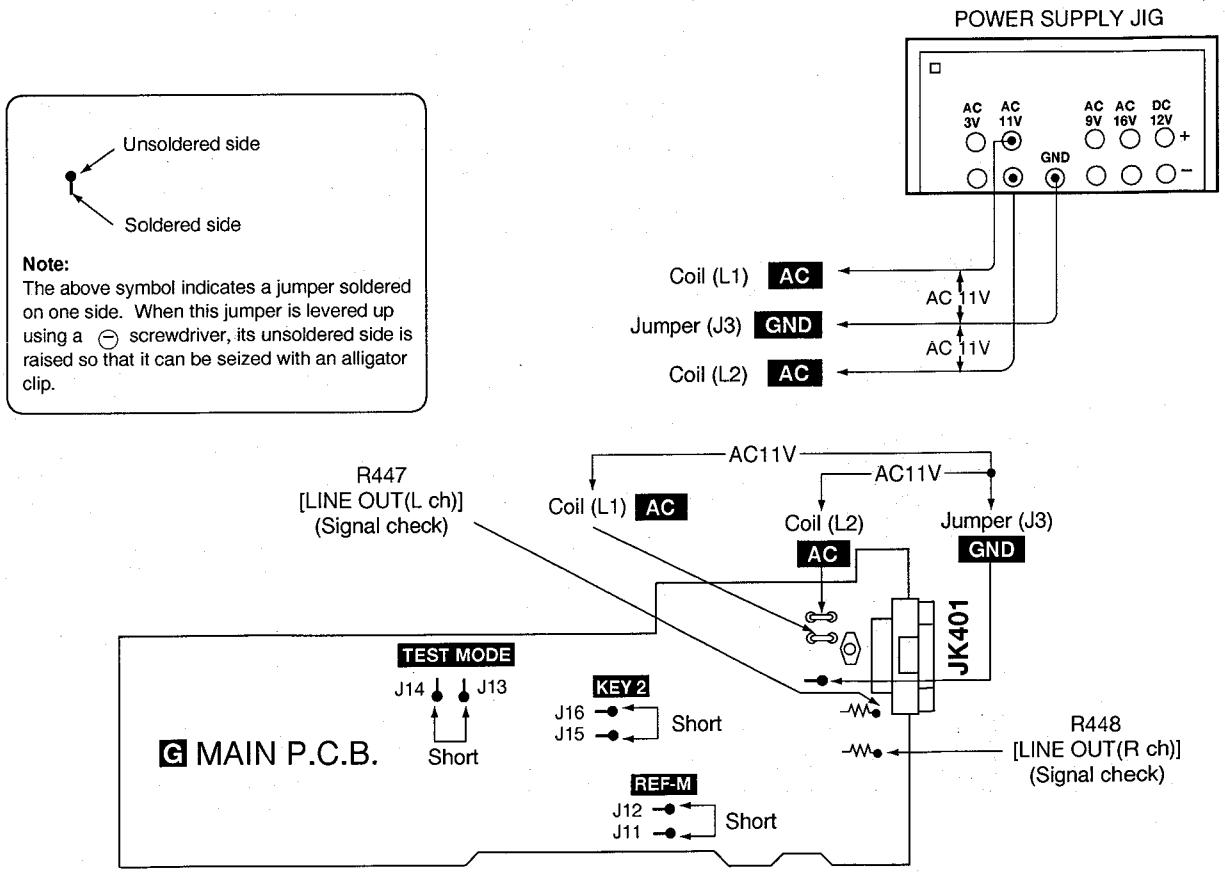
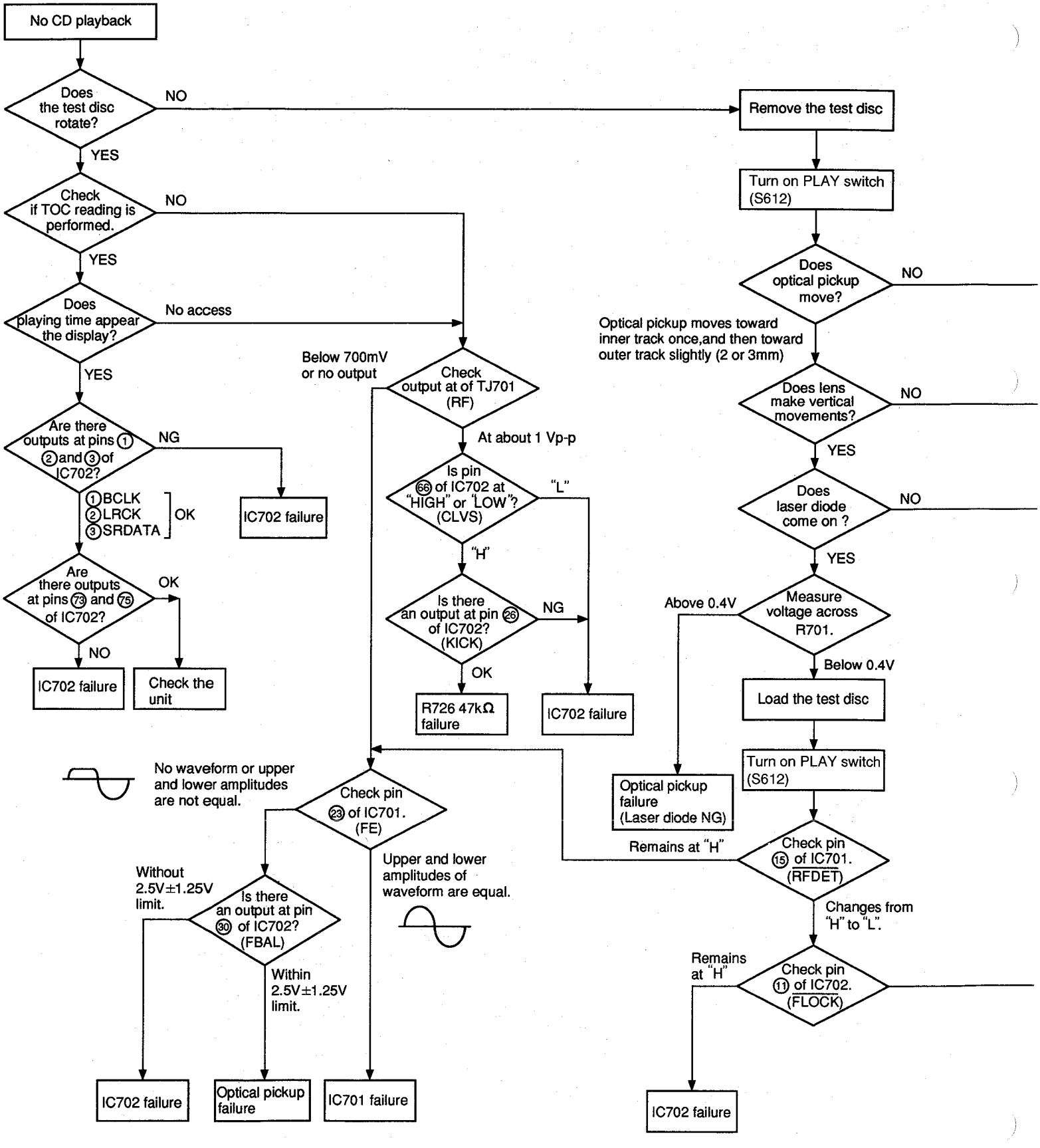
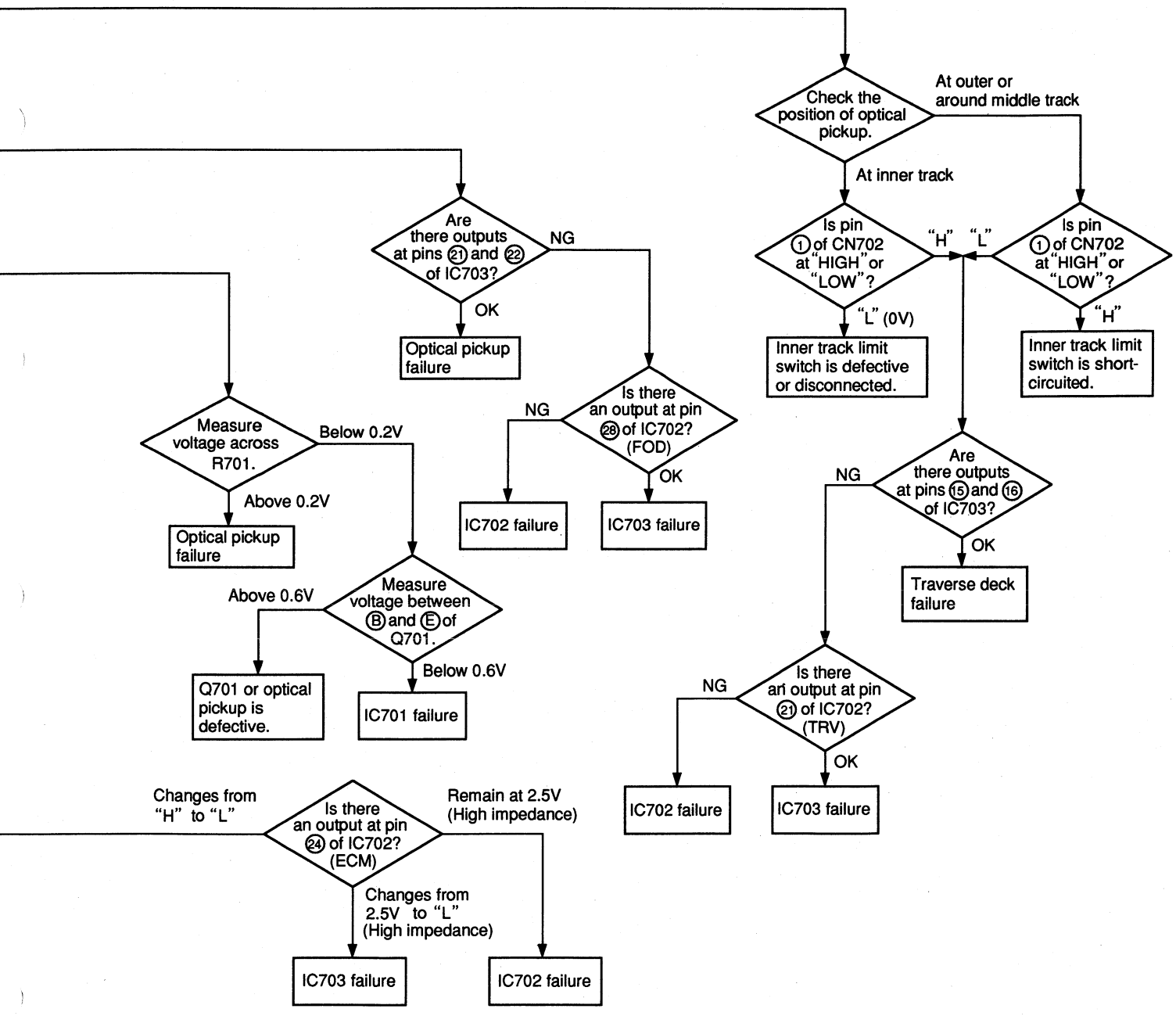


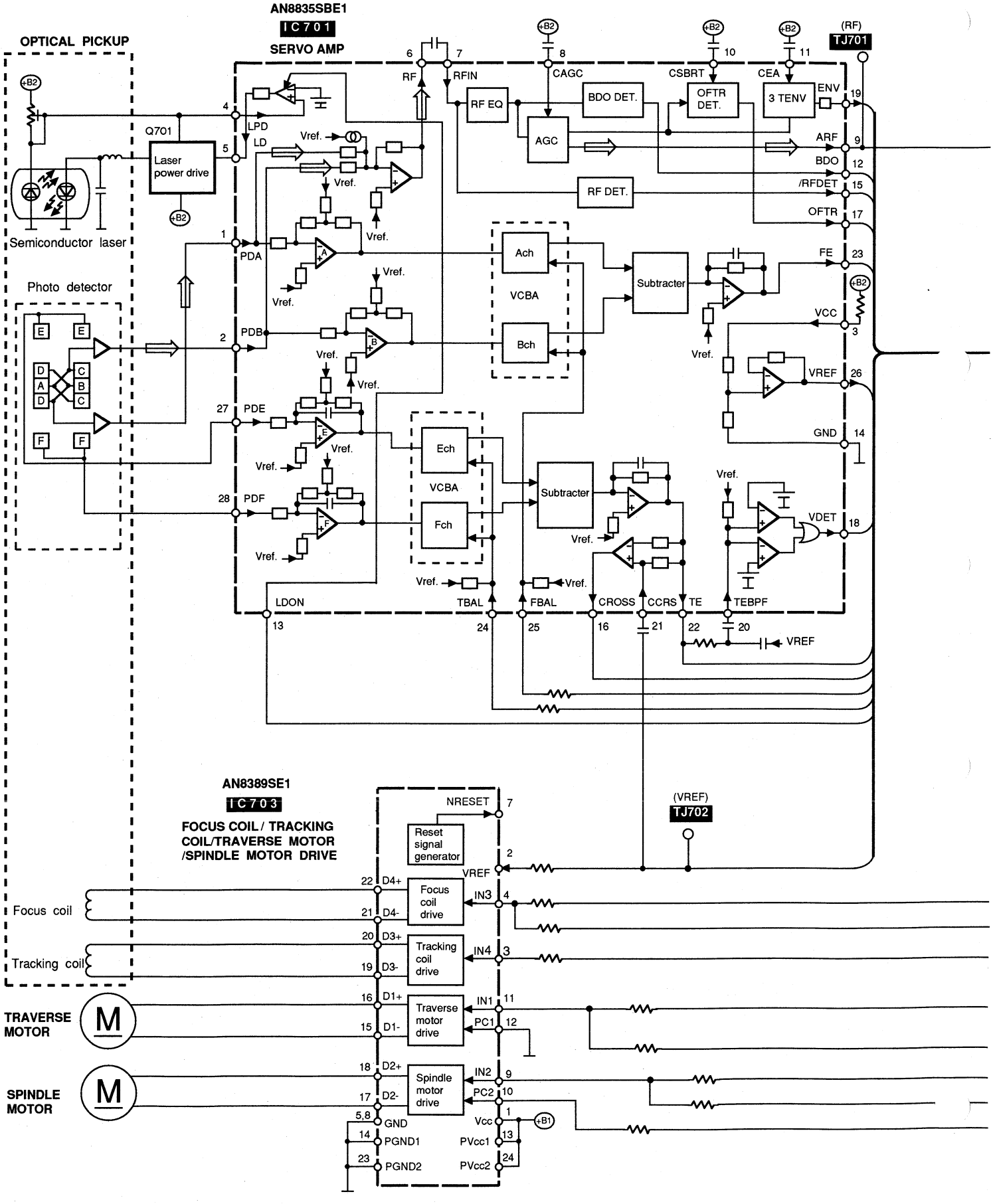
Fig. 1

■TROUBLE SHOOTING (SERVO CIRCUIT)

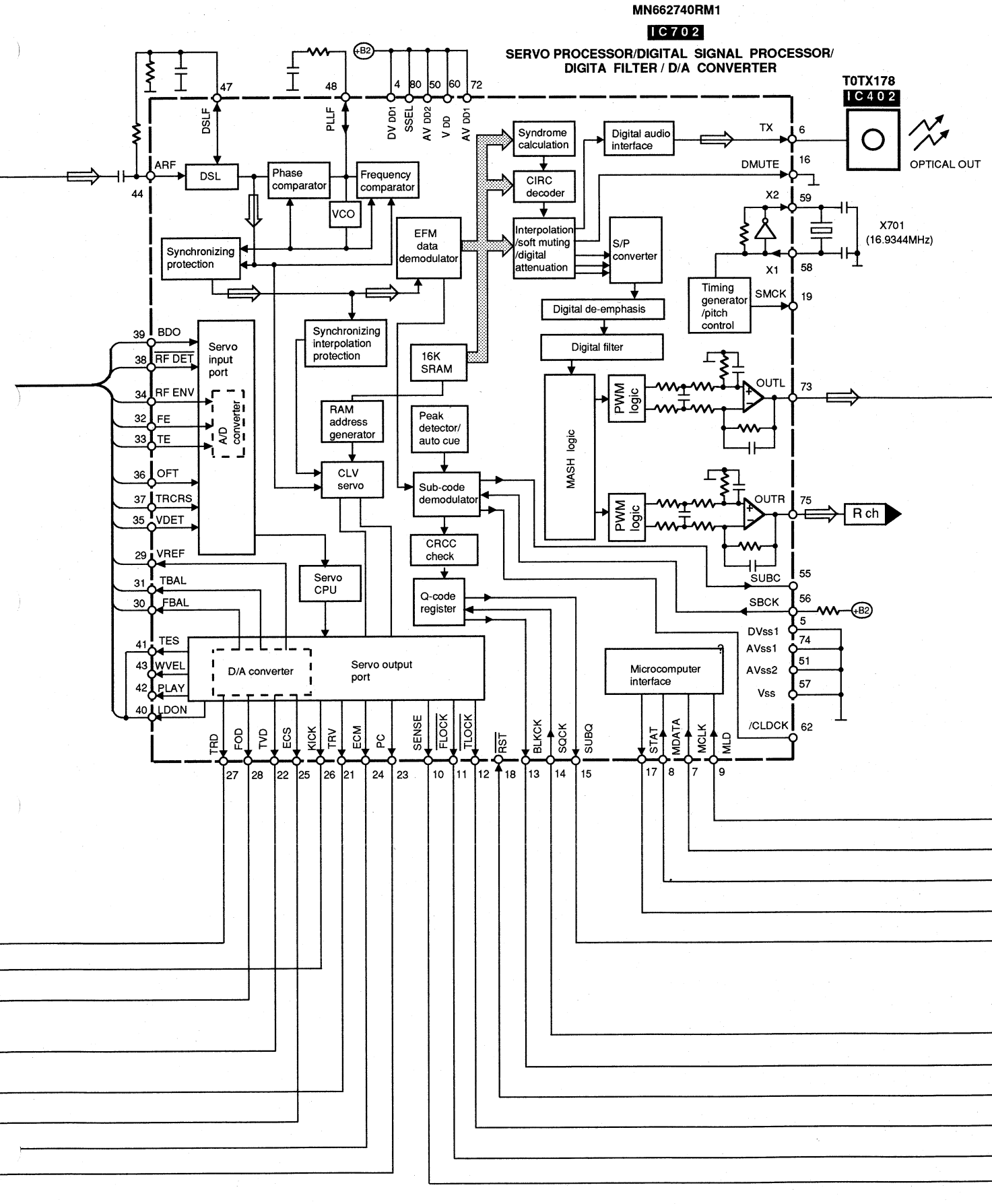



Check the position of optical pickup.
At outer or around middle track
At inner track
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
"L"
Is pin ① of CN702 at "HIGH" or "LOW"?
"L" (0V)
"H"
Inner track limit switch is defective or disconnected.
Inner track limit switch is short-circuited.
Are there outputs at pins ㉑ and ㉒ of IC703?
NG
OK
Optical pickup failure
Is there an output at pin ㉘ of IC702? (FOD)
NG
OK
IC702 failure
IC703 failure
Measure voltage across R701.
Below 0.2V
Above 0.2V
Optical pickup failure
Measure voltage between Ⓑ and Ⓔ of Q701.
Above 0.6V
Below 0.6V
Q701 or optical pickup is defective.
IC701 failure
Are there outputs at pins ⑮ and ⑯ of IC703?
NG
OK
Traverse deck failure
Is there an output at pin ㉑ of IC702? (TRV)
NG
OK
IC702 failure
IC703 failure
Changes from "H" to "L"
Is there an output at pin ㉔ of IC702? (ECM)
Remain at 2.5V (High impedance)
Changes from 2.5V to "L" (High impedance)
IC703 failure
IC702 failure

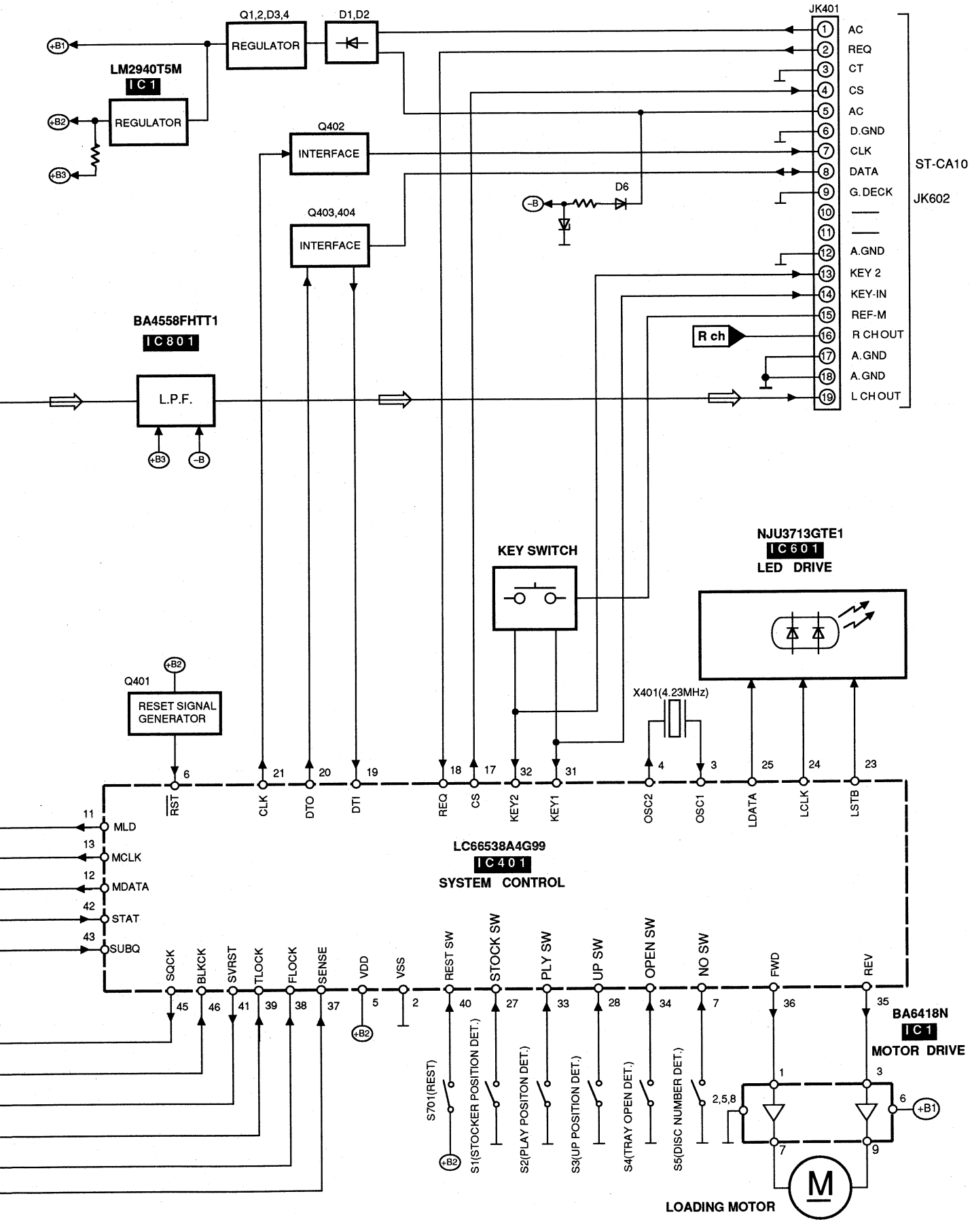
■ BLOCK DIAGRAM



● Signal line ⇨ : CD signal



● Signal line ⇨ : CD signal



■ SCHEMATIC DIAGRAM (Parts list on pages 37, 38, 41, 42.)

- This schematic diagram may be modified at any time with the development of new technology.

	Page
A SERVO CIRCUIT	26, 27
B SWITCH CIRCUIT	28
C SWITCH (S2, S3) CIRCUIT	28
D LED CIRCUIT	28
E LOADING MOTOR CIRCUIT	28
F OPERATION CIRCUIT	28
G MAIN CIRCUIT	28, 29

Notes:

- **S1** : Stocker position detect switch
- **S2** : Play position detect switch
- **S3** : Up position detect switch
- **S4** : Tray open detect switch
- **S5** : Disc number detect switch
- **S601～S605**: Disc select switch (DISC) [S601: DISC 5, S602: DISC 4, S603: DISC 3, S604: DISC 2, S605: DISC 1]
- **S606**: Disc check switch (DISC CHECK)
- **S607**: Repeat switch (REPEAT)
- **S608**: AI edit switch (AI EDIT)
- **S609**: Random play switch (RANDOM)
- **S610**: R. skip/ search switch (|◀◀/◀◀)
- **S611**: Stop switch (□)
- **S612**: Play switch (▷)
- **S613**: F. skip/ search switch (▶▶/▶▶|)
- **S614**: Pause switch: (❚❚)
- **S615**: Disc tray open/close switch (▲OPEN/CLOSE)
- **S701**: Rest detect switch
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

  No mark: CD STOP
  ( ): CD play [1kHz, L+R, 0dB]

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

- Caution!
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

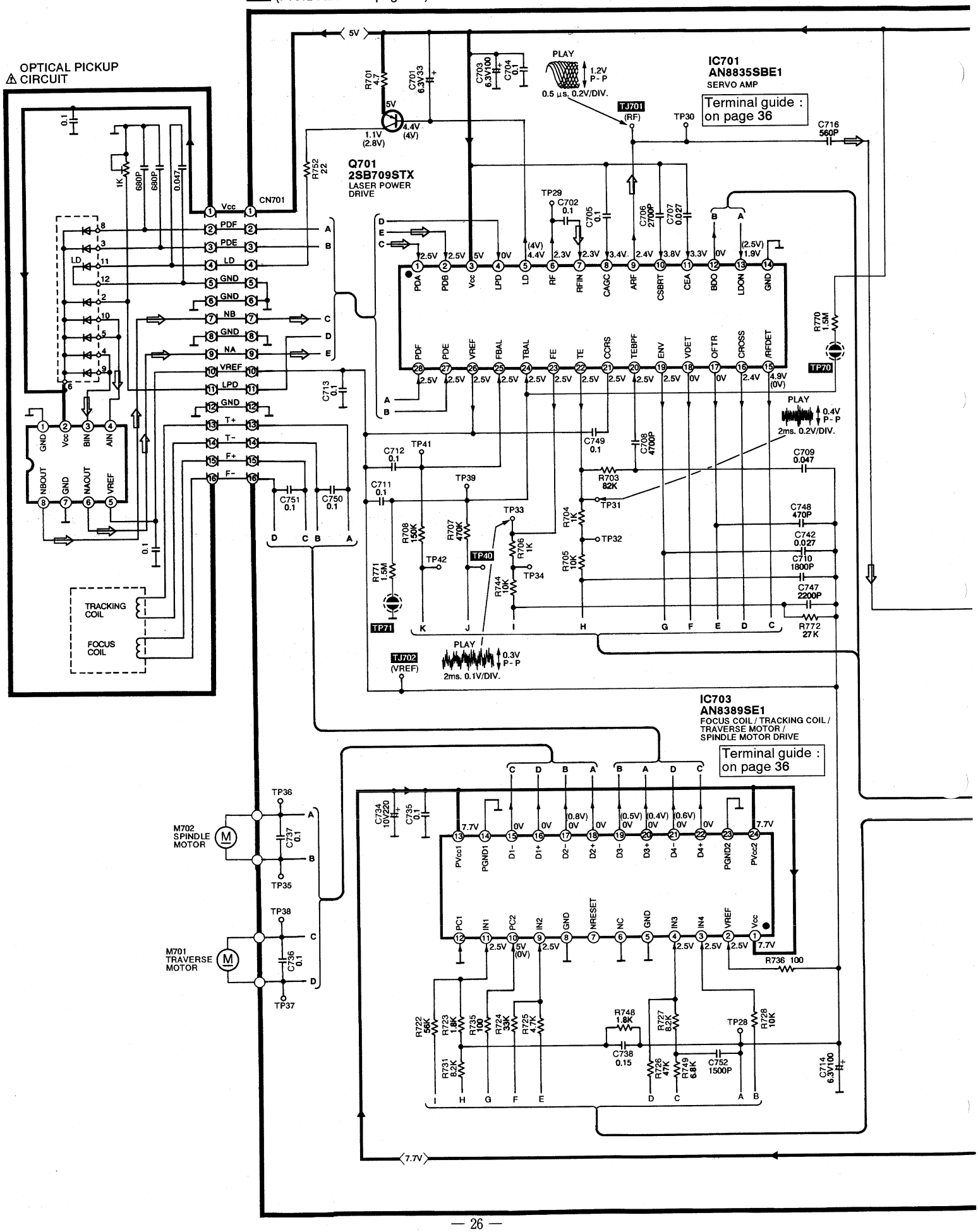
- Voltage and signal line

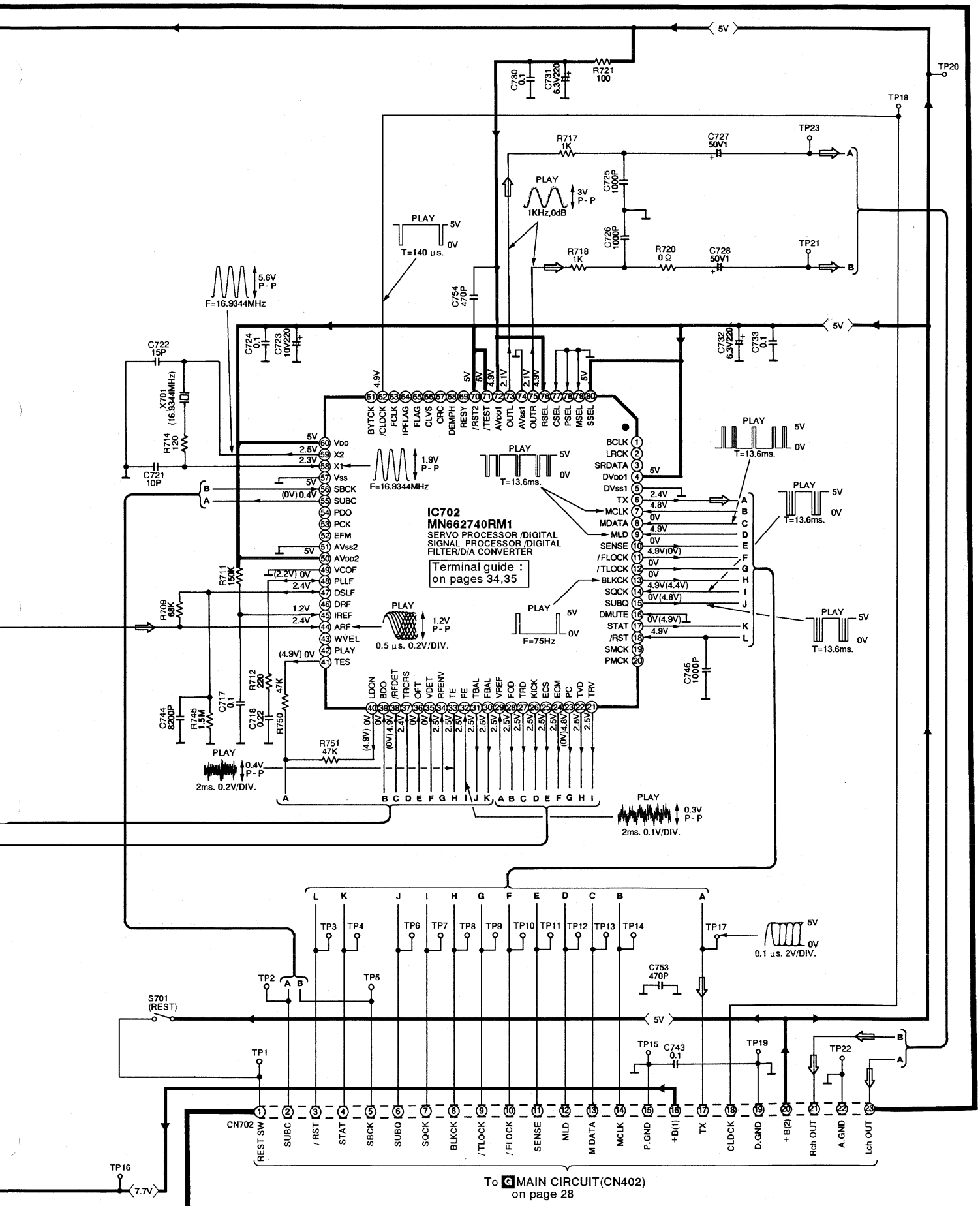
  ▬▶▬ : Positive voltage line

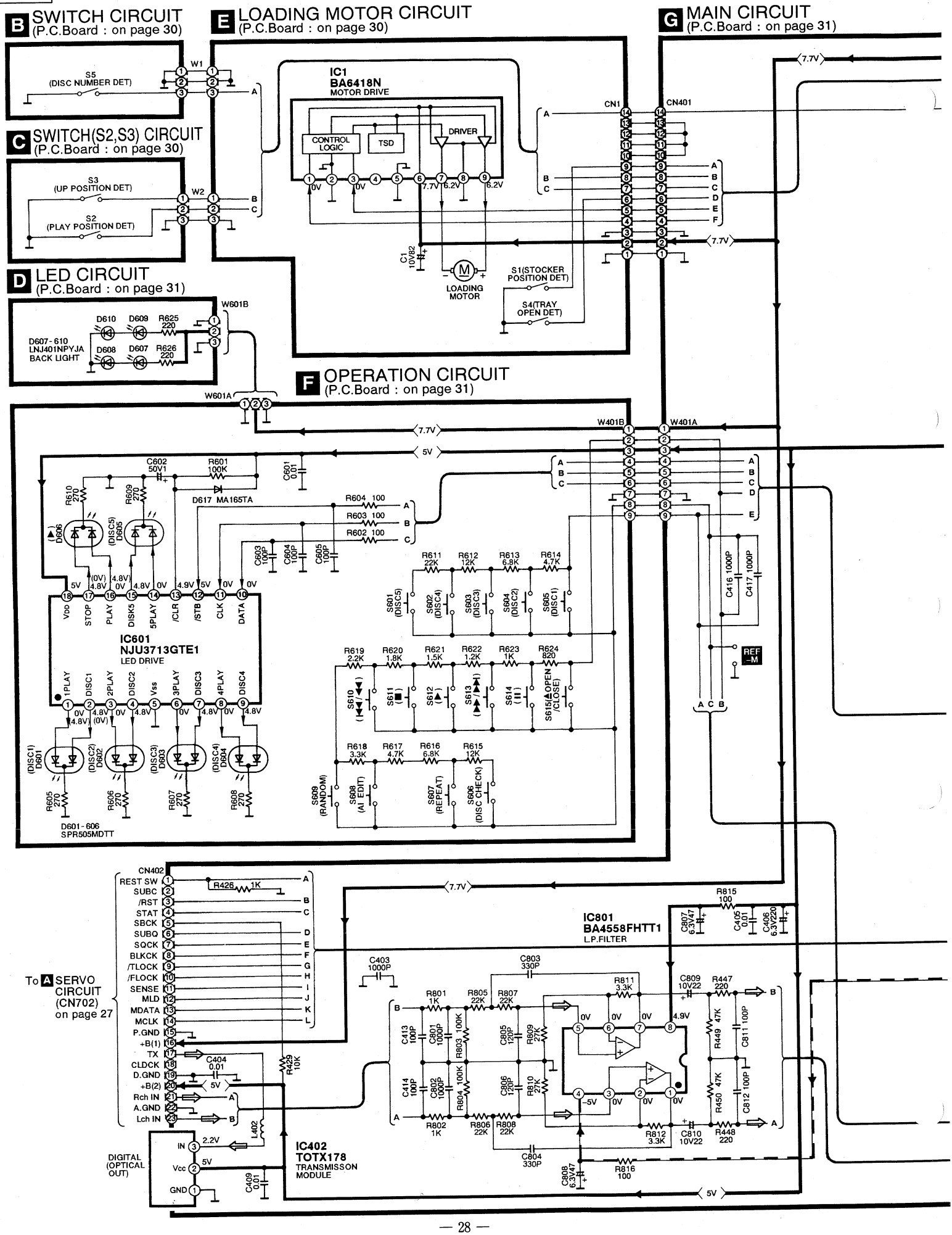
  ▪▪▪▶▪▪▪ : Negative voltage line

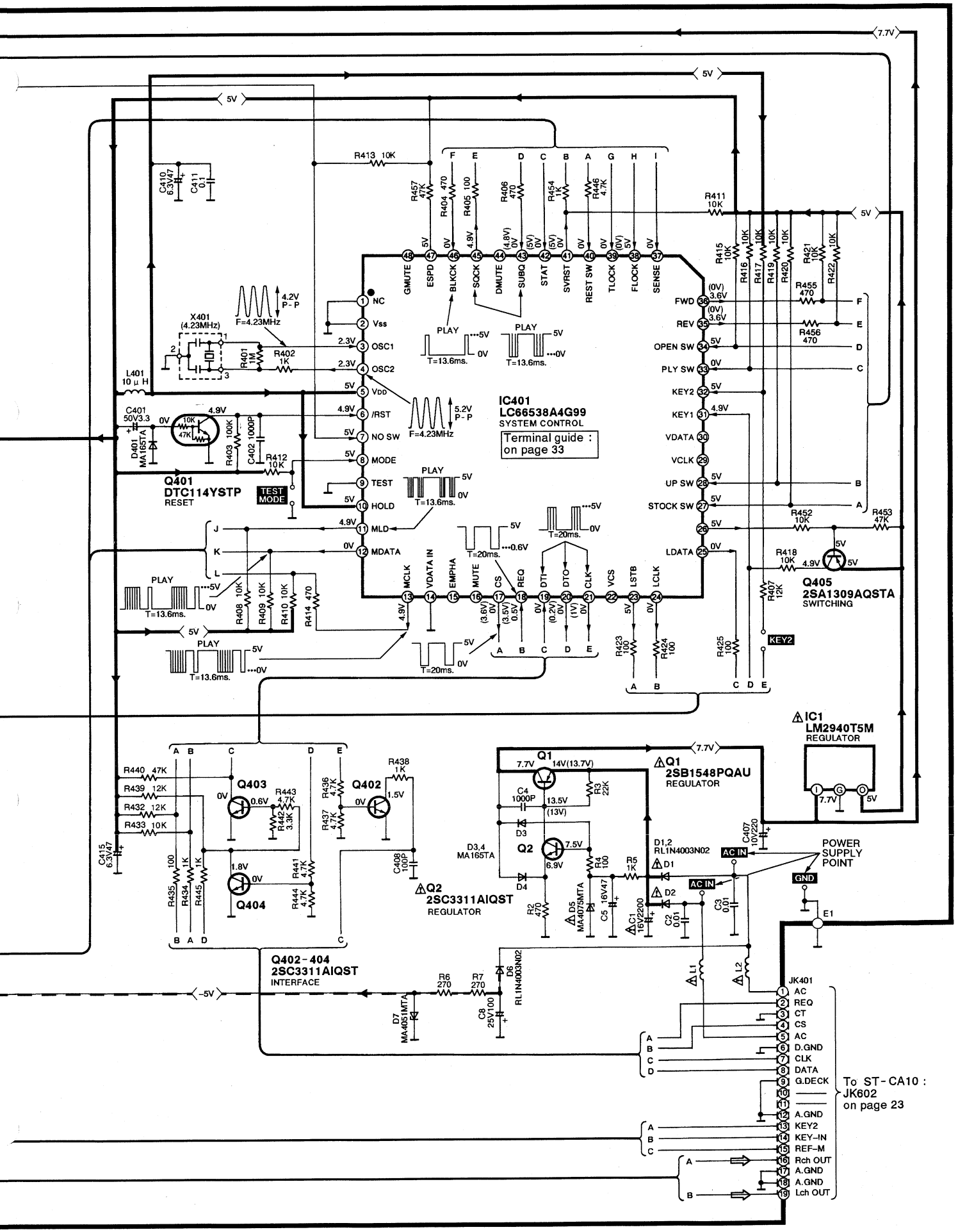
  ⟹ : CD signal line

A SERVO CIRCUIT
(P.C.Board : on page 30)




IC702
MN662740RM1
SERVO PROCESSOR /DIGITAL SIGNAL PROCESSOR /DIGITAL FILTER/D/A CONVERTER
Terminal guide : on pages 34,35
CN702
To C MAIN CIRCUIT(CN402) on page 28

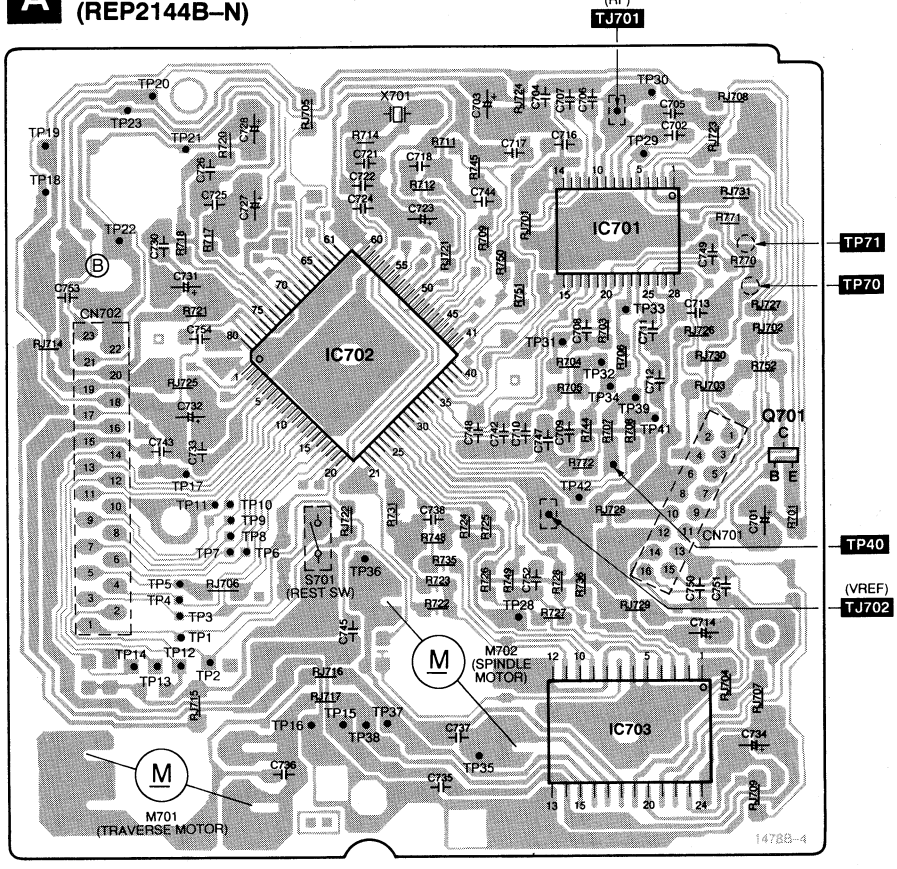

B SWITCH CIRCUIT
(P.C.Board : on page 30)
S5
(DISC NUMBER DET)
W1
C SWITCH(S2,S3) CIRCUIT
(P.C.Board : on page 30)
S3
(UP POSITION DET)
S2
(PLAY POSITION DET)
W2
D LED CIRCUIT
(P.C.Board : on page 31)
W601B
D610
D609
R625
220
D607 - 610
LNJ401NPYJA
BACK LIGHT
D608
D607
R626
220
E LOADING MOTOR CIRCUIT
(P.C.Board : on page 30)
IC1
BA6418N
MOTOR DRIVE
CONTROL LOGIC
TSD
DRIVER
0V
0V
7.7V
6.2V
6.2V
C1
10V82
LOADING MOTOR
S1(STOCKER POSITION DET)
S4(TRAY OPEN DET)
G MAIN CIRCUIT
(P.C.Board : on page 31)
CN1
CN401
7.7V
7.7V
F OPERATION CIRCUIT
(P.C.Board : on page 31)
W601A
W401B
W401A
7.7V
5V
C602
50V1
R601
100K
C601
0.01
D617 MA165TA
R610
270
R609
270
D606
(DISC5)
D605
R604 100
R603 100
R602 100
C603
100P
C604
100P
C605
100P
R611
22K
R612
12K
R613
6.8K
R614
4.7K
S601
(DISC5)
S602
(DISC4)
S603
(DISC3)
S604
(DISC2)
S605
(DISC1)
C416 1000P
C417 1000P
REF
-M
A C B
5V
(0V)
4.8V
0V
4.8V
0V
4.9V
5V
0V
0V
VDD
STOP
PLAY
DISK5
5PLAY
/CLR
/STB
CLK
DATA
IC601
NJU3713GTE1
LED DRIVE
1PLAY
DISC1
2PLAY
DISC2
Vss
3PLAY
DISC3
4PLAY
DISC4
0V
4.8V
(0V)
4.8V
0V
4.8V
0V
4.8V
0V
4.8V
(DISC1)
D601
(DISC2)
D602
(DISC3)
D603
(DISC4)
D604
R605
270
R606
270
R607
270
R608
270
D601 - 606
SPR505MDTT
R619
2.2K
R620
1.8K
R621
1.5K
R622
1.2K
R623
1K
R624
820
S610
S611
S612
S613
S614
S615(OPEN /CLOSE)
R618
3.3K
R617
4.7K
R616
6.8K
R615
12K
S609
(RANDOM)
S608
(AI EDIT)
S607
(REPEAT)
S606
(DISC CHECK)
CN402
REST SW
SUBC
/RST
STAT
SBCK
SUBQ
SQCK
BLKCK
/TLOCK
/FLOCK
SENSE
MLD
MDATA
MCLK
P.GND
+B(1)
TX
CLDCK
D.GND
+B(2)
Rch IN
A.GND
Lch IN
R426 1K
C404
0.01
5V
R429
10K
L402
To A SERVO CIRCUIT
(CN702)
on page 27
DIGITAL
(OPTICAL
OUT)
IN
Vcc
GND
2.2V
5V
C409
0.01
IC402
TOTX178
TRANSMISSON
MODULE
7.7V
IC801
BA4558FHTT1
L.P.FILTER
R815
100
C807
6.3V47
C405
0.01
C406
6.3V220
C403
1000P
C803
330P
R801
1K
R805
22K
R807
22K
R811
3.3K
C809
10V22
R447
220
C413
100P
C807
1000P
R803
100K
C805
120P
R809
27K
R449
47K
C811
100P
C414
100P
C802
1000P
R804
100K
C806
120P
R810
27K
R450
47K
C812
100P
R802
1K
R806
22K
R808
22K
R812
3.3K
C810
10V22
R448
220
C804
330P
C808
6.3V47
R816
100
0V
0V
0V
4.9V
-5V
0V
0V
0V
5V


IC401
LC66538A4G99
SYSTEM CONTROL
Terminal guide :
on page 33
Q401
DTC114YSTP
RESET
TEST MODE
Q405
2SA1309AQSTA
SWITCHING
IC1
LM2940T5M
REGULATOR
Q1
2SB1548PQAU
REGULATOR
Q403
Q402
Q404
Q2
2SC3311AIQST
REGULATOR
Q402-404
2SC3311AIQST
INTERFACE
POWER SUPPLY POINT
AC IN
GND
KEY2
JK401
To ST-CA10 :
JK602
on page 23
GMUTE
ESPD
BLKCK
SQCK
DMUTE
SUBQ
STAT
SVRST
REST SW
TLOCK
FLOCK
SENSE
FWD
REV
OPEN SW
PLY SW
KEY2
KEY1
VDATA
VCLK
UP SW
STOCK SW
LDATA
MCLK
VDATA IN
EMPHA
MUTE
CS
REQ
DTI
DTO
CLK
VCS
LSTB
LCLK
NC
Vss
OSC1
OSC2
VDD
/RST
NO SW
MODE
TEST
HOLD
MLD
MDATA
X401
(4.23MHz)
F=4.23MHz
4.2V P-P
5.2V P-P
PLAY
T=13.6ms.
T=20ms.
AC
REQ
CT
CS
AC
D.GND
CLK
DATA
G.DECK
A.GND
KEY2
KEY-IN
REF-M
Rch OUT
A.GND
A.GND
Lch OUT

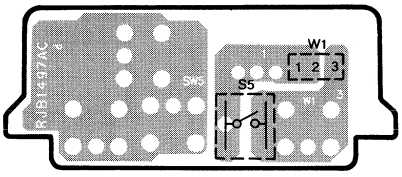
■PRINTED CIRCUIT BOARD DIAGRAM

● This printed circuit board diagram may be modified at any time with the development of new technology.

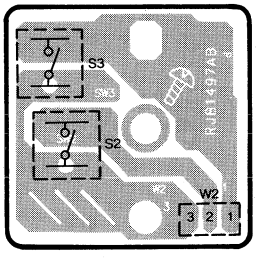
A SERVO P.C.B. (REP2144B–N)



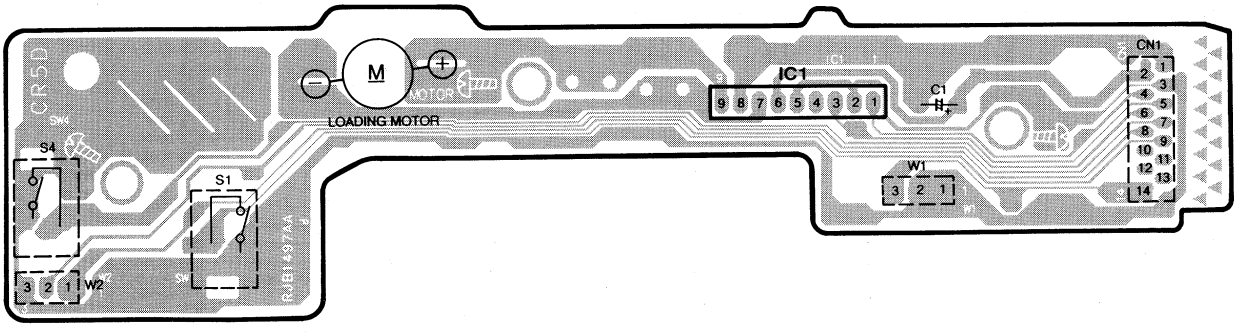
B SWITCH P.C.B. (REP2182A–N)



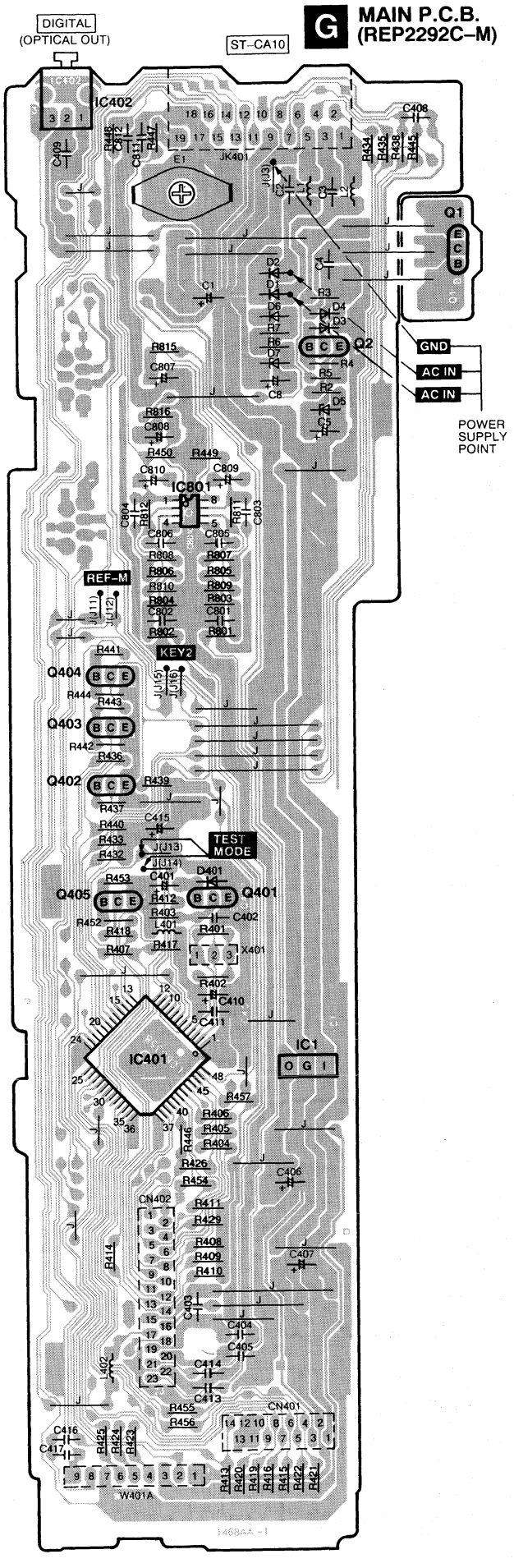
C SWITCH(S2,S3) P.C.B. (REP2182A–N)



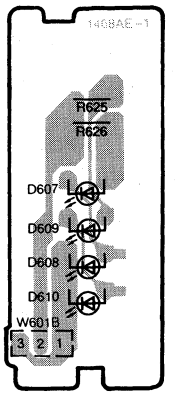
E LOADING MOTOR P.C.B. (REP2182A–N)



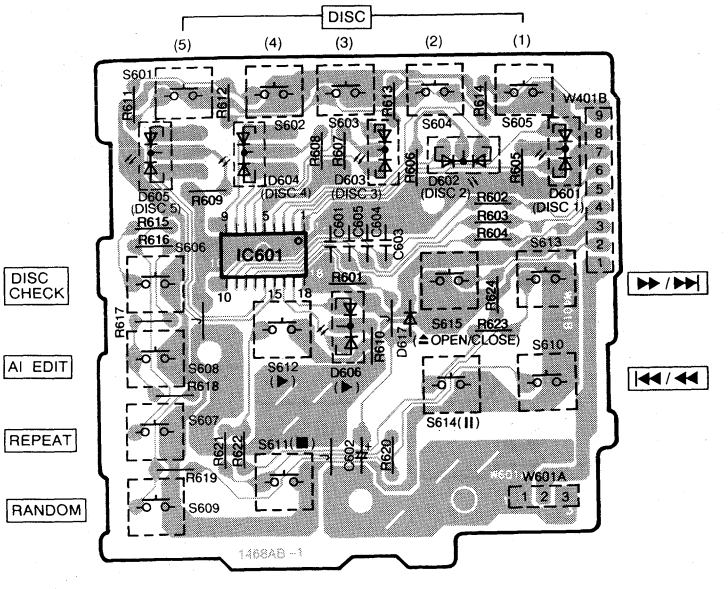
G MAIN P.C.B. (REP2292C–M)



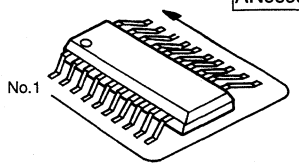
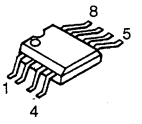
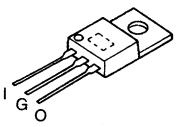
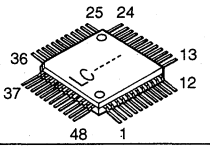
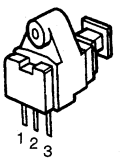
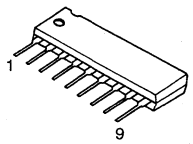
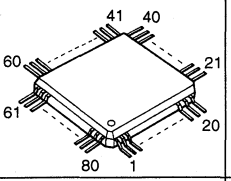
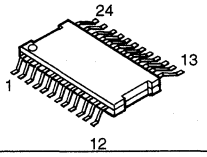
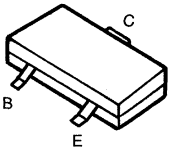
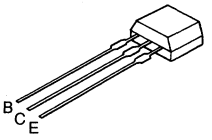
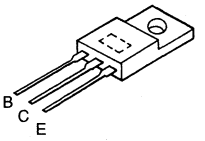
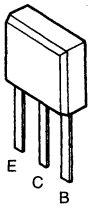
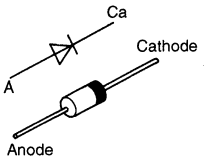
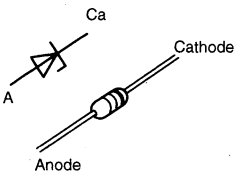
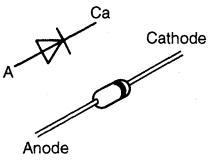
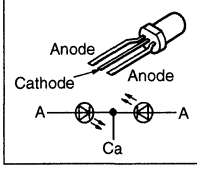
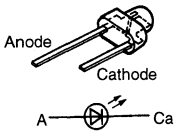
D LED P.C.B. (REP2292C–M)



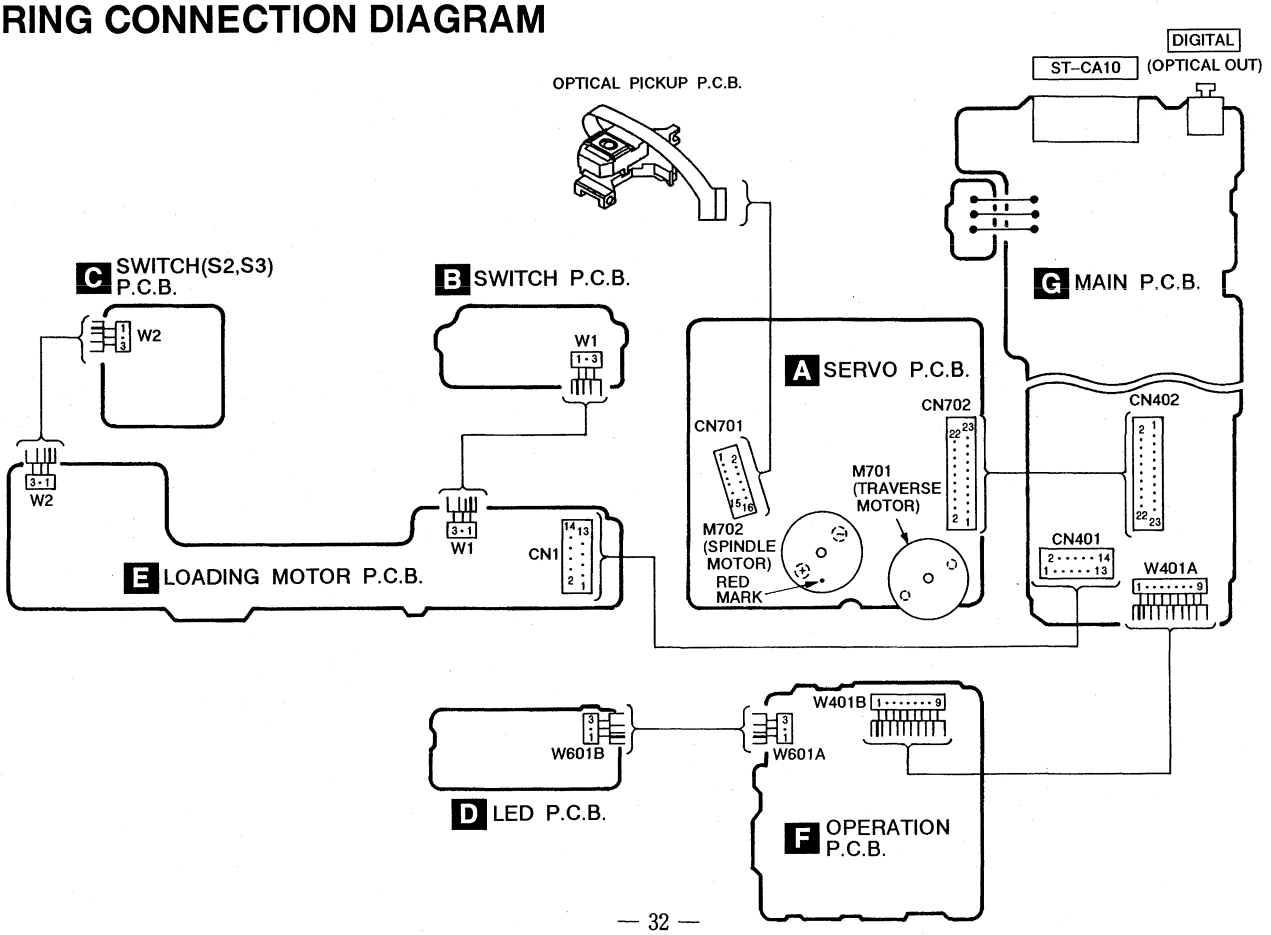
F OPERATION P.C.B. (REP2292C–M)



• Terminal guide of IC's , transistors and diodes

NJU3713GTE1 18PIN AN8835SBE1 28PIN 	BA4558FHTT1 	LM2940T5M 	LC66538A4G99 	TOTX178 
BA6418N 	MN662740RM1 	AN8389SE1 	2SB709STX 	DTC114YSTP 	2SB1548PQAU 
	2SA1309AQSTA 2SC3311AIQST	RL1N4003N02 	MA4051MTA MA4075MTA 	MA165TA 	
SPR505MDTT 	LNJ401NPYJA 				

■ WIRING CONNECTION DIAGRAM



■ TERMINAL GUIDE

● IC401 (LC66538A4G99): System Control

Pin No.	Mark	I/O Division	Function
1	NC	–	Not used, connected to GND
2	VSS	–	GND terminal
3	OSC1	I	Crystal OSC terminal (f=4.23 MHz)
4	OSC2	O	
5	VDD	I	Power supply terminal
6	/RST	I	Reset signal input terminal ("L"=RESET)
7	NO SW	I	Disc tray No. det. input terminal
8	MODE	I	Test mode signal input terminal
9	TEST	–	Test terminal
10	HOLD	I	Not used, connected to power supply
11	MLD	O	Command load signal
12	MDATA	O	Command data signal
13	MCLK	O	Command clock signal
14	VDATA IN	–	Not used, connected to GND
15	EMPHA	–	Not used, open
16	MUTE	–	Not used, open
17	CS	O	Communication request signal to ST-CA10
18	REQ	I	Communication request signal from ST-CA10
19	DTI	I	Communication data signal from ST-CA10
20	DTO	O	Communication data signal to ST-CA10
21	CLK	O	Communication clock signal to ST-CA10
22	VCS	–	Not used, open
23	LSTB	O	LED drive output terminal
24	LCLK	O	LED drive command clock output terminal

Pin No.	Mark	I/O Division	Function
25	LDATA	O	LED drive command clock output terminal
26	–	–	Not used, connected to power supply
27	STOCK SW	I	Stocker position det. input terminal
28	UP SW	I	Disc tray up position det. input terminal
29	VCLK	–	Not used, open
30	VDATA	–	Not used, open
31	KEY1	I	Key switch det. input terminal
32	KEY2		
33	PLY SW	I	Disc tray play position det. input terminal
34	OPEN SW	I	Disc tray open position det. input terminal
35	REV	O	Loading motor reverse signal output terminal
36	FWD	O	Loading motor forward signal output terminal
37	SENSE	I	Sense signal input terminal
38	FLOCK	I	Optical servo condition (focus) ("L": lead-in)
39	TLOCK	I	Optical servo condition (tracking) ("L": lead-in)
40	REST SW	I	Rest position det. input terminal
41	SVRST	O	Reset signal to servo processor
42	STAT	I	Status signal input terminal
43	SUBQ	I	Sub-code Q data input terminal
44	DMUTE	–	Not used, open
45	SQCK	O	Sub-code Q resister clock output terminal
46	BLKCK	I	Sub-code block clock input terminal (f=75Hz)
47	ESPD	–	Not used, connected to power supply
48	GMUTE	–	Not used, open

● IC702 (MN662740RM1): Servo processor/ digital signal processor/ digital filter/ D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal (Not used, open)
2	LRCK	O	L/R discriminating signal (Not used, open)
3	SRDATA	O	Serial data (Not used, open)
4	$DV_{DD}1$	I	Power supply (digital circuit) terminal
5	$DV_{SS}1$	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L":LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz) (Not used, open)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336MHz) (Not used, open)
20	PMCK	O	Frequency division clock signal (No used, open) ($f=\frac{1}{1.92}$ x ck=88.2kHz)
21	TRV	O	Traverse servo control

Pin No.	Mark	I/O Division	Function
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drived output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balancef adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFT	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play) (Not used, open)

Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSLF	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal
50	AVDD2	I	Power supply (analog circuit) terminal(2)
51	AVSS2	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f= 4.3218MHz) (Not used, open)
54	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output clock (Not used, open)
56	SBCK	I	Sub-code serial data (Not used, connected to power supply)
57	V SS	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344MHz)
59	X2	O	
60	VDD	I	Reset signal ("L": reset)
61	BYTCK	O	Byte clock signal (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35KHz: Normal) (Not used, open)
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
65	FLAG	O	Flag terminal (Not used, open)
66	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	O	Sub-code CRC check terminal ("H": ON, "L": NG) (Not used, open)
68	DEMPH	O	De-emphasis ON signal ("H": ON) (Not used, open)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after " MASH" circuit (Not used, connected to power supply)
71	/TEST	I	Test terminal (Normal: "H") (Not used, connected to power supply)
72	AVDD1	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	AV SS1	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply
77	CSEL	I	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	PSEL	I	Test terminal (Normal:"L") (Not used, connected to GND)
79	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336MHz) (Not used, connected to GND)
80	SSEL	O	"SUBQ" terminal mode select ("H": Q code buffer) (Not used, connected to power supply

● IC701 (AN8835SBE1): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDA	I	Focus signal input terminal 1 (Ach)
2	PDB	I	Focus signal input terminal 2 (Bch)
3	VCC	I	Power supply terminal
4	LPD	I	Laser PD signal
5	LD	O	Laser power auto control output
6	RF	O	RF amp terminal
7	RF IN	I	AGC input terminal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CSBRT	I	OFTR capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	BDO	O	Dropout detection control
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	GND	—	GND terminal

Pin No.	Mark	I/O Division	Function
15	/RFDET	O	RF det. signal ("L": det.)
16	CROSS	O	Tracking error zero cross output
17	OFTR	O	Off track detection ("H": det.)
18	VDET	O	Oscillation det. signal ("H": det.)
19	ENV	O	Envelope output terminal
20	TEBPF	I	Oscillation detect input terminal (Not used, open)
21	CCRS	I	CROSS capacitor connection terminal
22	TE	O	Tracking error signal
23	FE	O	Focusing error signal
24	TBAL	I	Tracking balance adj. input
25	FBAL	I	Focus balance adj. input
26	VREF	O	Reference voltage output
27	PDE	I	Tracking signal input terminal 1 (Ech)
28	PDF	I	Tracking signal input terminal 2 (F ch)

● IC703(AN8389SE1): Focus coil/ tracking coil/ traverse coil/ spindle motor

Pin No.	Mark	I/O Division	Function
1	Vcc	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	Not used, connected to GND
7	NRESET	O	Reset terminal (Not used, open)
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut)input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, connected to GND)

Pin No.	Mark	I/O Division	Function
13	PVcc1	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1-	O	Motor driver (1) output terminal (-)
16	D1+	O	Motor driver (1) output terminal (+)
17	D2-	O	Motor driver (2) output terminal (-)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3-	O	Motor driver (3) output terminal (-)
20	D3+	O	Motor driver (3) output terminal (+)
21	D4-	O	Motor driver (4) output terminal (-)
22	D4+	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	PVcc2	I	Driver power supply (2)

■ RESISTORS AND CAPACITORS

Notes: * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R2	ERDS2TJ471	1/4W 470
R3	ERDS2TJ223	1/4W 22K
R4	ERDS2TJ101	1/4W 100
R5	ERDS2TJ102	1/4W 1K
R6, 7	ERDS2TJ271	1/4W 270
R401	ERDS2TJ105T	1/4W 1M
R402	ERDS2TJ102	1/4W 1K
R403	ERDS2TJ104	1/4W 100K
R404	ERDS2TJ471	1/4W 470
R405	ERDS2TJ101	1/4W 100
R406	ERDS2TJ471	1/4W 470
R407	ERDS2TJ123	1/4W 12K
R408-413	ERDS2TJ103	1/4W 10K
R414	ERDS2TJ471	1/4W 470
R415-422	ERDS2TJ103	1/4W 10K
R423-425	ERDS2TJ101	1/4W 100
R426	ERDS2TJ102	1/4W 1K
R429	ERDS2TJ103	1/4W 10K
R432	ERDS2TJ123	1/4W 12K
R433	ERDS2TJ103	1/4W 10K
R434	ERDS2TJ102	1/4W 1K
R435	ERDS2TJ101	1/4W 100
R436, 437	ERDS2TJ472	1/4W 4.7K
R438	ERDS2TJ102	1/4W 1K
R439	ERDS2TJ123	1/4W 12K
R440	ERDS2TJ473	1/4W 47K
R441	ERDS2TJ472	1/4W 4.7K
R442	ERDS2TJ332	1/4W 3.3K
R443, 444	ERDS2TJ472	1/4W 4.7K
R445	ERDS2TJ102	1/4W 1K
R446	ERDS2TJ472	1/4W 4.7K
R447, 448	ERDS2TJ221	1/4W 220
R449, 450	ERDS2TJ473	1/4W 47K
R452	ERDS2TJ103	1/4W 10K
R453	ERDS2TJ473	1/4W 47K
R454	ERDS2TJ102	1/4W 1K
R455, 456	ERDS2TJ471	1/4W 470
R457	ERDS2TJ473	1/4W 47K
R601	ERDS2TJ104	1/4W 100K
R602-604	ERDS2TJ101	1/4W 100
R605-610	ERDS2TJ271	1/4W 270
R611	ERDS2TJ223	1/4W 22K
R612	ERDS2TJ123	1/4W 12K
R613	ERDS2TJ682T	1/4W 6.8K
R614	ERDS2TJ472	1/4W 4.7K
R615	ERDS2TJ123	1/4W 12K
R616	ERDS2TJ682T	1/4W 6.8K
R617	ERDS2TJ472	1/4W 4.7K
R618	ERDS2TJ332	1/4W 3.3K
R619	ERDS2TJ222	1/4W 2.2K
R620	ERDS2TJ182	1/4W 1.8K
R621	ERDS2TJ152	1/4W 1.5K
R622	ERDS2TJ122	1/4W 1.2K
R623	ERDS2TJ102	1/4W 1K
R624	ERDS2TJ821	1/4W 820
R625, 626	ERDS2TJ221	1/4W 220
R801, 802	ERDS2TJ102	1/4W 1K
R803, 804	ERDS2TJ104	1/4W 100K
R805-808	ERDS2TJ223	1/4W 22K
R809, 810	ERDS2TJ273	1/4W 27K
R811, 812	ERDS2TJ332	1/4W 3.3K
R815, 816	ERDS2TJ101	1/4W 100
		CAPACITORS
C1 ⚠	ECA1CM222B	16V 2200U
C2, 3	ECBT1E103ZF	25V 0.01U
C4	ECBT1H102KB5	50V 1000P
C5	RCE1CKA470BG	16V 47U
C8	ECA1EM101B	25V 100U
C401	RCE1HKA3R3BG	50V 3.3U
C402, 403	ECBT1H102KB5	50V 1000P
C404, 405	ECBT1E103ZF	25V 0.01U
C406	RCE0JKA221BV	6.3V 220U
C407	ECEA1AKA221B	10V 220U
C408	ECBT1H101KB5	50V 100P
C409	ECBT1E103ZF	25V 0.01U
C410	RCE0JKA470BG	6.3V 47U
C411	ECBT1H104ZF5	50V 0.1U
C413, 414	ECBT1H101KB5	50V 100P
C415	RCE0JKA470BG	6.3V 47U
C416, 417	ECBT1H102KB5	50V 1000P
C601	ECBT1E103ZF	25V 0.01U
C602	ECEA1HKA010B	50V 1U
C603-605	ECBT1H101KB5	50V 100P
C801, 802	ECBT1H102KB5	50V 1000P
C803, 804	ECBT1H331KB5	50V 330P
C805, 806	ECBT1H121KB5	50V 120P
C807, 808	RCE0JKA470BG	6.3V 47U
C809, 810	ECEA1AKA220B	10V 22U
C811, 812	ECBT1H102KB5	50V 1000P
		< LOADING P.C.B. >
		CAPACITORS
C1	ECA1AKF820E	10V 82U
		< SERVO P.C.B >
		RESISTORS
R701	ERJ6GEYJ4R7V	1/10W 4.7
R703	ERJ6GEYJ823	1/10W 82K
R704	ERJ6GEYJ102A	1/10W 1K
R705	ERJ6GEYJ103V	1/10W 10K
R706	ERJ6GEYJ102A	1/10W 1K
R707	ERJ6GEYJ474V	1/10W 470K
R708	ERJ6GEYJ154V	1/10W 150K
R709	ERJ6GEYJ683V	1/10W 68K
R711	ERJ6GEYJ154V	1/10W 150K
R712	ERJ6GEYJ221V	1/10W 220
R714	ERJ6GEYJ121V	1/10W 120
R717, 718	ERJ6GEYJ102A	1/10W 1K
R720	ERJ6GEY0R00A	1/10W 0.00
R721	ERJ6GEYJ101V	1/10W 100
R722	ERJ6GEYJ563V	1/10W 56K
R723	ERJ6GEYJ182V	1/10W 1.8K
R724	ERJ6GEYJ333V	1/10W 33K
R725	ERJ6GEYJ472V	1/10W 4.7K
R726	ERJ6GEYJ473V	1/10W 47K
R727	ERJ6GEYJ822V	1/10W 8.2K
R728	ERJ6GEYJ103V	1/10W 10K
R731	ERJ6GEYJ822V	1/10W 8.2K
R735, 736	ERJ6GEYJ101V	1/10W 100
R744	ERJ6GEYJ103V	1/10W 10K
R745	ERJ6GEYJ155V	1/10W 1.5M
R748	ERJ6GEYJ182V	1/10W 1.8K
R749	ERJ6GEYJ682V	1/10W 6.8K
R750, 751	ERJ6GEYJ473V	1/10W 47K
R752	ERJ8GEYJ220V	1/8W 22
R770, 771	ERJ6GEYJ155V	1/10W 1.5M
R772	ERJ6GEYJ273V	1/10W 27K
		CHIP JUMPERS
RJ701-709	ERJ8GEY0R00A	CHIP JUMPER
RJ714-717	ERJ8GEY0R00A	CHIP JUMPER
RJ721-731	ERJ6GEY0R00A	CHIP JUMPER
		CAPACITORS
C701	ECEA0JKA330I	6.3V 33U
C702	ECUZNE104MBN	25V 0.1U
C703	ECEA0JKA101I	6.3V 100U
C704, 705	ECUZNE104MBN	25V 0.1U

Ref. No.	Part No.	Values & Remarks
C706	ECUV1H272KBN	50V 2700P
C707	ECUV1E273KBN	25V 0.027U
C708	ECUE1H472KBN	50V 4700P
C709	ECUE1C473KBN	16V 0.047U
C710	ECUV1H182KBN	50V 1800P
C711, 712	ECUWNE104ZFN	25V 0.1U
C713	ECUV1C104MBM	16V 0.1U
C714	ECEA0JKA101I	6.3V 100U
C716	ECUE1H561KBN	50V 560P
C717	ECUWNE104ZFN	25V 0.1U
C718	ECUVNC224KBN	16V 0.22U
C721	ECUV1H100DCN	50V 10P

Ref. No.	Part No.	Values & Remarks
C722	ECUV1H150JCN	50V 15P
C723	ECEA1AKA221I	10V 220U
C724	ECUV1C104MBM	16V 0.1U
C725, 726	ECUE1H102KBN	50V 1000P
C727, 728	ECEA1HPK010I	50V 1U
C730	ECUWNE104ZFN	25V 0.1U
C731, 732	ECEA0JKA221I	6.3V 220U
C733	ECUZNE104MBN	25V 0.1U
C734	ECEA1AKA221I	10V 220U
C735-737	ECUWNE104ZFN	25V 0.1U
C738	ECUV1C154KBN	16V 0.15U
C742	ECUV1E273KBN	25V 0.027U

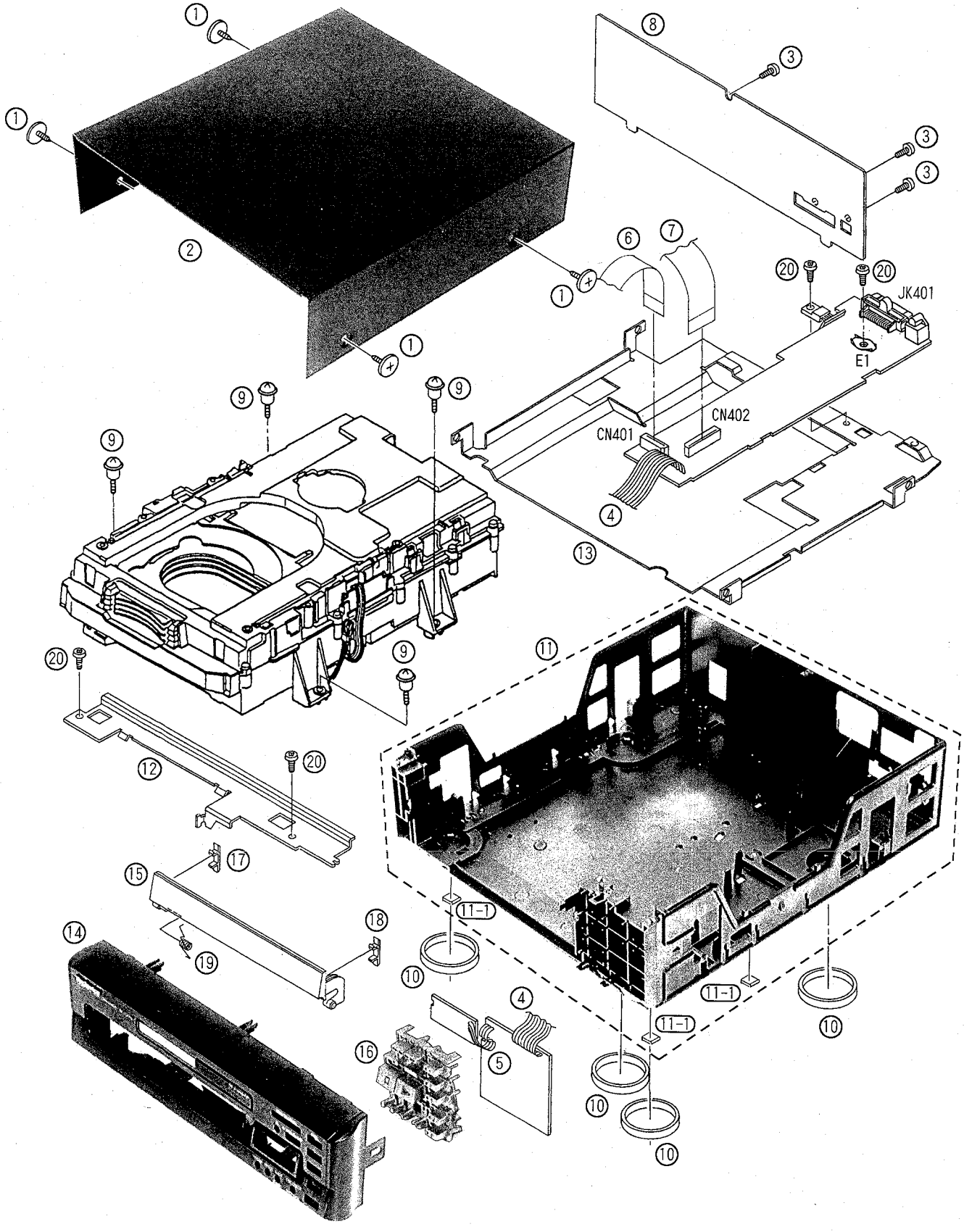
Ref. No.	Part No.	Values & Remarks
C743	ECUWNE104ZFN	25V 0.1U
C744	ECUE1E822KBN	25V 8200P
C745	ECUE1H102KBN	50V 1000P
C747	ECUE1H222KBN	50V 2200P
C748	ECUV1H471KBM	50V 470P
C749	ECUZNE104MBN	25V 0.1U
C750	ECUV1C104MBM	16V 0.1U
C751	ECUZNE104MBN	25V 0.1U
C752	ECUE1H152KBN	50V 1500P
C753	ECUV1H471KBM	50V 470P
C754	ECUE1H471KBN	50V 470P

■REPLACEMENT PARTS LIST

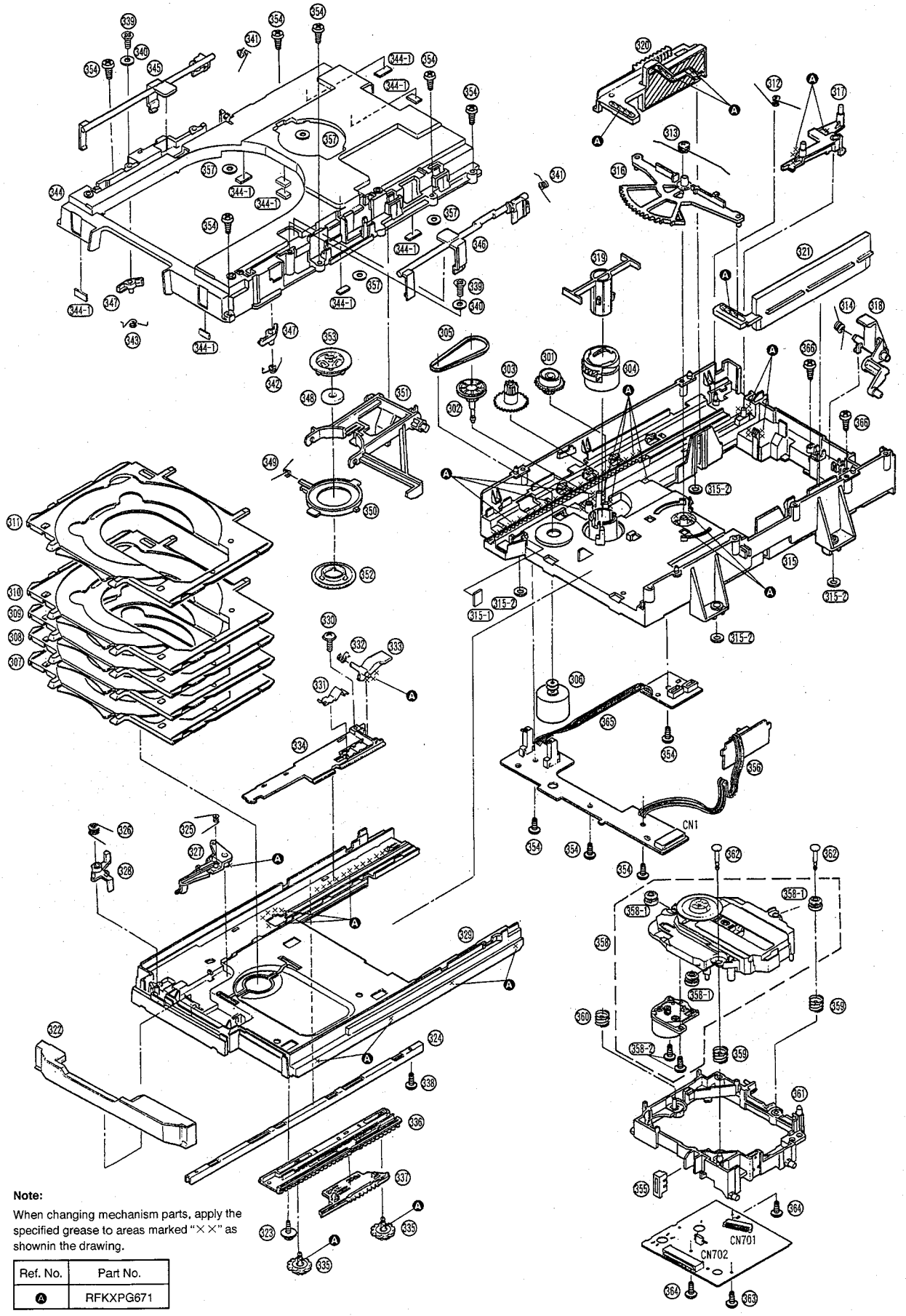
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RHD30007-K1	SCREW	
2	RKM0222-3K	CABINET	
3	XTBS3+8JFZ1	SCREW	
4	RWJ1809125KK	FLAT CABLE(9P) (W401)	
5	RWJ1803055KK	FLAT CABLE(3P) (W601)	
6	REZ0555	FFC(14P)	
7	REZ0765	FFC(23P)	
8	RGR0217B-C	REAR PANEL	
9	RHD30065	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
10	RKA0068-N	FOOT RING	
11	RFKJLCA7-N	FRAME ASS'Y	
11-1	SHG1654	FOOT RUBBER	
12	RMA0931	REINFORCING PLATE	
13	RSC0425	SHIELD PLATE	
14	RFKGLCA10E-K	FRONT PANEL ASS'Y	
15	RFKNLCA10EBK	TRAY DOOR ASS'Y	
16	RFKNLCA10ECK	BUTTON BLOCK ASS'Y	
17	RKQ0197-X	SLIDE PIECE(L)	
18	RKQ0204-X	SLIDE PIECE(R)	
19	RMB0472	DOOR SPRING	
20	XTB3+8JFZ	SCREW	

■CABINET PARTS LOCATION



■ LOADING MECHANISM PARTS



Note:

When changing mechanism parts, apply the specified grease to areas marked "××" as shownin the drawing.

Ref. No.	Part No.
Ⓐ	RFKXPG671

■REPLACEMENT PARTS LIST

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* Warning: This product uses a laser diode. Refer to caution statements on page 2.
* ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks
		LOADING MECHANISM	
301	RDG0309	INTERMEDIATE GEAR	
302	RDG0310	PULLEY GEAR	
303	RDG0311	DRIVE GEAR	
304	RDG0313	UP/DOWN GEAR	
305	RDV0036	BELT	
306	RFKPDS790PK1	MOTOR ASS'Y	
307	RGQ0170-K	DISC TRAY(1)	
308	RGQ0171-K	DISC TRAY(2)	
309	RGQ0172-K	DISC TRAY(3)	
310	RGQ0173-K	DISC TRAY(4)	
311	RGQ0174-K	DISC TRAY(5)	
312	RME0170	LOCK LEVER SPRING	
313	RME0179	ASSIST SPRING	
314	RME0180	TRAY HOLD SPRING	
315	RFKNACH430GC	MECHANISM BASE ASS'Y	
315-1	RMF0221	FELT	
315-2	RMG0402-K	RUBBER WASHER	
316	RML0379	CONVERSION LEVER	
317	RML0380	LOCK LEVER	
318	RML0383	TRAY HOLD LEVER	
319	RML0385	UP/DOWN LEVER	
320	RMM0139	SLIDE PLATE(1)	
321	RMM0141	SLIDE PLATE(2)	
322	RGQ0175-K	TRAY ORNAMENT	
323	RHD20010	SCREW	
324	RMA0868	REINFORCING ANGLE	
325	RME0171	BASE LOCK LEVER SPRING	
326	RME0172	CARRIER LOCK LEVER SPRING	
327	RML0377	BASE LOCK LEVER	
328	RML0378	CARRIER LOCK LEVER	
329	RMR0884-K	TRAY BASE	
330	RHD20009-1	SCREW	
331	RMC0274	TRAY HOOK SPRING	
332	RME0173	CARRIER ARM SPRING	
333	RML0376-1	CARRIER ARM	
334	RMM0137	CARRIER	
335	RDG0312	SPEED GEAR	
336	RMM0134	DRIVE RACK	
337	RMM0135	CUSHION RACK	
338	XTN2+6F	SCREW	
339	XTS3+8J	SCREW	
340	XWE4E10	WASHER	
341	RME0178	HOLD SPRING	
342	RME0181	LIFT PREVENTION SPRING(1)	
343	RME0182	LIFT PREVENTION SPRING(2)	
344	RFKNLCA10EAK	MECHANISM COVER ASS'Y	
344-1	RMF0221	FELT	
345	RML0381	HOLD NAIL(1)	
346	RML0382	HOLD NAIL(2)	
347	RML0384	LIFT PREVENTION LEVER	
348	RHM245ZA	MAGNET	
349	RME0174	CLAMP LEVER SPRING	
350	RFKNACH430GE	CLAMP BASE ASS'Y	
351	RML0388-1	CLAMP LEVER	
352	RMR0761-W	CLAMPER	
353	RMR0899-K	FIXED PLATE	
354	XTB3+10J	SCREW	
355	RMR0975-W	TRAVERSE CAP	
356	REZ0793	FLAT CABLE(3P) (W1)	
357	RMG0430-Q	RUBBER TUBE	
358	RAE0150Z	TRAVERSE DECK ASS'Y	
358-1	SHGD113-1	FLOATING RUBBER	
358-2	SNSD38	SCREW	
359	RME0109	FLOATING SPRING(1)	
360	RME0142	FLOATING SPRING(2)	
361	RMK0293	TRAVERSE CHASSIS	
362	RMS0123-1	TRAVERSE FIXED PIN	
363	XTN2+6G	SCREW	
364	XTV2+6G	SCREW	
365	REZ0792	FLAT CABLE(3P) (W2)	
366	XTWS3+8T	SCREW	
		INTEGRATED CIRCUIT(S)	
IC1	LM2940T5	REGULATOR	⚠
IC401	LC66538A4G99	SYSTEM CONTROL	
IC402	TOTX178	TRANSMISSON MODULE	
IC601	NJU3713GTE1	LED DRIVE	
IC801	BA4558FHTT1	L.P.F.	
		TRANSISTOR(S)	
Q1	2SB1548PQAU	TRANSISTOR	⚠
Q2	2SC3311AIQST	TRANSISTOR	⚠
Q401	DTC114YSTP	TRANSISTOR	
Q402-404	2SC3311AIQST	TRANSISTOR	
Q405	2SA1309A-R	TRANSISTOR	
		DIODE(S)	
D1, 2	RL1N4003N02	DIODE	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D3, 4	MA165	DIODE	
D5	MA4075MTA	DIODE	⚠
D6	RL1N4003N02	DIODE	
D7	MA4051MTA	DIODE	
D401	MA165	DIODE	
D601-606	SPR505MDTT	L. E. D.	
D607-610	LNJ401NPYJA	L. E. D.	
D617	MA165	DIODE	
		COIL (S)	
L1, 2	BL02RN2R65T2	COIL	⚠
L401	RLQA100JT-Y	COIL	
L402	BL02RN2R65T2	COIL	
		OSCILLATOR(S)	
X401	EF0EC4234T3	OSCILLATOR(4. 23MHz)	
		SWITCH(ES)	
S601	EVQ21405R	DISC5	
S602	EVQ21405R	DISC4	
S603	EVQ21405R	DISC3	
S604	EVQ21405R	DISC2	
S605	EVQ21405R	DISC1	
S606	EVQ21405R	DISC CHECK	
S607	EVQ21405R	REPEAT	
S608	EVQ21405R	AI EDIT	
S609	EVQ21405R	RANDOM	
S610	EVQ21405R	R. SKIP/SEARCH	
S611	EVQ21405R	STOP	
S612	EVQ21405R	PLAY	
S613	EVQ21405R	F. SKIP/SEARCH	
S614	EVQ21405R	PAUSE	
S615	EVQ21405R	OPEN/CLOSE	
		CONNECTOR(S)	
CN401	RJS1A6814	CONNECTOR(14P)	
CN402	RJS1A6823	CONNECTOR(23P)	
JK401	RJT065K19	CONNECTOR(19P)	
		EARTH PLATE(S)	
E1	SNE1004-2	EARTH PLATE	
		< LOADING P. C. B. >	
		INTEGRATED CIRCUIT(S)	
IC1	BA6418N	MOTOR DRIVE	

Ref. No.	Part No.	Part Name & Description	Remarks
		SWITCH(ES)	
S1	RSH1A005	STOCKER POSITION DET.	
S2	RSH1A032-U	PLAY POSITION DET.	
S3	RSH1A032-U	UP POSITION DET.	
S4	RSH1A005	TRAY OPEN DET.	
S5	RSH1A032-U	DISC NUMBER DET.	
		CONNECTOR(S)	
CN1	RJS1A6714	CONNECTOR(14P)	
		<SERVO P. C. B>	
		INTEGRATED CIRCUIT(S)	
IC701	AN8835SBE1	SERVO AMP	
IC702	MN662740RM1	SERVO PROCESSOR	
IC703	AN8389SE1	COIL & MOTOR DRIVE	
		TRANSISTOR(S)	
Q701	2SB709S	TRANSISTOR	
		OSCILLATOR(S)	
X701	RSXB16M9J02T	OSCILLATOR(16. 9344MHz)	
		SWITCH(ES)	
S701	RSM0006-P	REST DETECTOR	
		CONNECTOR(S) AND SOCKET(S)	
CN701	RJU035T016-1	SOCKET(16P)	
CN702	RJS1A6723-1Q	CONNECTOR(23P)	
		<GREASE OR JIG/TOOL>	
		TEST DISC	
SA1	SZZP1054C	PLAYABILITY TEST DISC	
		GREASE	
SA2	RFKXPG671	MOLYCOAT GREASE PG671	

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